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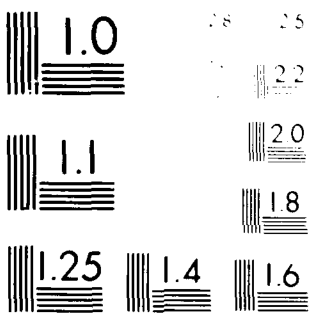
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# MX SITING INVESTIGATION

# GRAVITY SURVEY - DELAMAR VALLEY
# NEVADA

Prepared for:

U.S Department of the Air Force
Ballistic Missile Office (BMO)
Norton Air Force Base, California 92409

Prepared by:

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20 July 1981

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## REPORT DOCUMENTATION PAGE

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| | |
|---|---|
| 1. REPORT NUMBER | E-TR-33-DM ~~E-TR-33-DM~~ |
| 2. GOVT ACCESSION NO. | |
| 3. RECIPIENT'S CATALOG NUMBER | |
| 4. TITLE (*and Subtitle*) | MX Siting Invest. Gravity Sur. Delamar Valley NV |
| 5. TYPE OF REPORT & PERIOD COVERED | Final |
| 6. PERFORMING ORG. REPORT NUMBER | E-TR-33 DM |
| 7. AUTHOR(s) | Ertec |
| 8. CONTRACT OR GRANT NUMBER(s) | F04704-80-C-0006 |
| 9. PERFORMING ORGANIZATION NAME AND ADDRESS | Ertec Western Inc. (formerly Fugro National) P.O. Box 7765 Long Beach Ca 90807 |
| 10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS | 64312 F |
| 11. CONTROLLING OFFICE NAME AND ADDRESS | U.S. Department of the Air Force Space and Missile Systems Organization Norton AFB Ca 92409 (SAMSO) |
| 12. REPORT DATE | 20 Jul 81 |
| 13. NUMBER OF PAGES | 37 |
| 14. MONITORING AGENCY NAME & ADDRESS (*if different from Controlling Office*) | |
| 15. SECURITY CLASS. (*of this report*) | -- |
| 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE | |

16. DISTRIBUTION STATEMENT (*of this Report*)

Distribution Unlimited

17. DISTRIBUTION STATEMENT (*of the abstract entered in Block 20, if different from Report*)

Distribution Unlimited

18. SUPPLEMENTARY NOTES

19. KEY WORDS (*Continue on reverse side if necessary and identify by block number*)

Gravity, SURVEY, BOUGUER CONTOURS, DEPTH TO ROCK, VALLEY FILL, FAULTS, GRAVITY PROFILE, GRABEN

20. ABSTRACT (*Continue on reverse side if necessary and identify by block number*)

Gravity data from Delamar Valley and Pahroc Valley were studied together for the purpose of making a geological interpretation which includes estimates of the overall shape of the structural basin, the thickness of alluvial fill, and the location of concealed faults. The estimates will be useful in modeling the dynamic response of ground motion in the basin and in evaluating groundwater resources. Gravity data and interpretation covering the part of Pahroc Valley referred to as "Eastern Pahroc Valley" (that part east of South Pahroc Range) in our ~~Verification report (Ertec, 1981b) are included in this report.~~

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# FOREWORD

Methodology and Characterization studies during Fiscal Years 1977 and 1978 (FY 77 and 78) included gravity surveys in ten valleys in Arizona (five), Nevada (two), New Mexico (two), and California (one). The gravity data were obtained for the purpose of estimating the gross structure and shape of the basins and the thickness of the valley fill. There was also the possibility of detecting shallow rock in areas between boring locations. Generalized interpretations from these surveys were included in Ertec Western's (formerly Fugro National) Characterization Reports (FN-TR-26a through e).

During the FY 77 surveys, measurements were made to form an approximate 1-mile grid over the study areas, and contour maps showing interpreted depth to bedrock were made. In FY 79, the decision was made to concentrate on verifying and refining suitable area boundaries. This decision resulted in a reduction in the gravity program. Instead of obtaining gravity data on a grid, the reduced program consisted of obtaining gravity measurements along profiles across the valleys where Verification studies were also performed.

The Defense Mapping Agency (DMA), St. Louis, Missouri, was requested to provide gravity data from their library to supplement the gravity profiles. For Big Smoky, Hot Creek, and Big Sand Springs valleys, a sufficient density of library data was available to permit construction of interpreted contour maps instead of just two-dimensional cross sections.

In late summer of FY 79, supplementary funds became available to begin data reduction. At that time, inner zone terrain corrections were begun on the library data and the profiles from Big Smoky Valley, Nevada, and Butler and La Posa valleys, Arizona. The profile data from Whirlwind, Hamlin, Snake East, White River, Garden, and Coal valleys, Nevada, became available from the field in early October 1979.

A continuation of gravity interpretations has been incorporated into the FY 80-81 program, and the results are being summarized in a series of valley reports. Reports covering Nevada-Utah gravity studies are numbered "E-TR-33-" followed by the abbreviation for the subject valley. In addition, more detailed reports of the results of FY 77 surveys in Dry Lake and Ralston valleys, Nevada, were prepared. Verification studies were continued in FY 80 and 81, and gravity studies were included in the program. DMA continued to obtain the field measurements, and there was a return to the grid pattern. The interpretation of the grid data allows the production of contour maps which are valuable in the deep basin structural analysis needed for computer modeling in the water resources program. The

gravity interpretations will also be useful in Nuclear Hardness and Survivability (NH&S) evaluations.

The basic decisions governing the gravity program are made by BMO following consultation with TRW, Inc., Ertec Western, and the DMA. Conduct of the gravity studies is a joint effort between DMA and Ertec Western. The field work, including planning, logistics, surveying, and meter operation is done by the Defense Mapping Agency Hydrographic/Topographic Center (DMAHTC), headquartered in Cheyenne, Wyoming. DMAHTC reduces the data to Simple Bouguer Anomaly (see Section A1.4, Appendix A1.0). The Defense Mapping Agency Aerospace Center (DMAAC), St. Louis, Missouri, calculates outer zone terrain corrections.

Ertec Western provides DMA with schedules showing the valleys with the highest priorities. Ertec Western also recommended locations for the profiles in the FY 79 studies with the provision that they should follow existing roads or trails. Any required inner zone terrain corrections are calculated by Ertec Western prior to making geologic interpretations.

# TABLE OF CONTENTS



## APPENDICES



## LIST OF FIGURES

TABLE OF CONTENTS (cont.)

LIST OF DRAWINGS

# 1.0 INTRODUCTION

## 1.1 OBJECTIVE

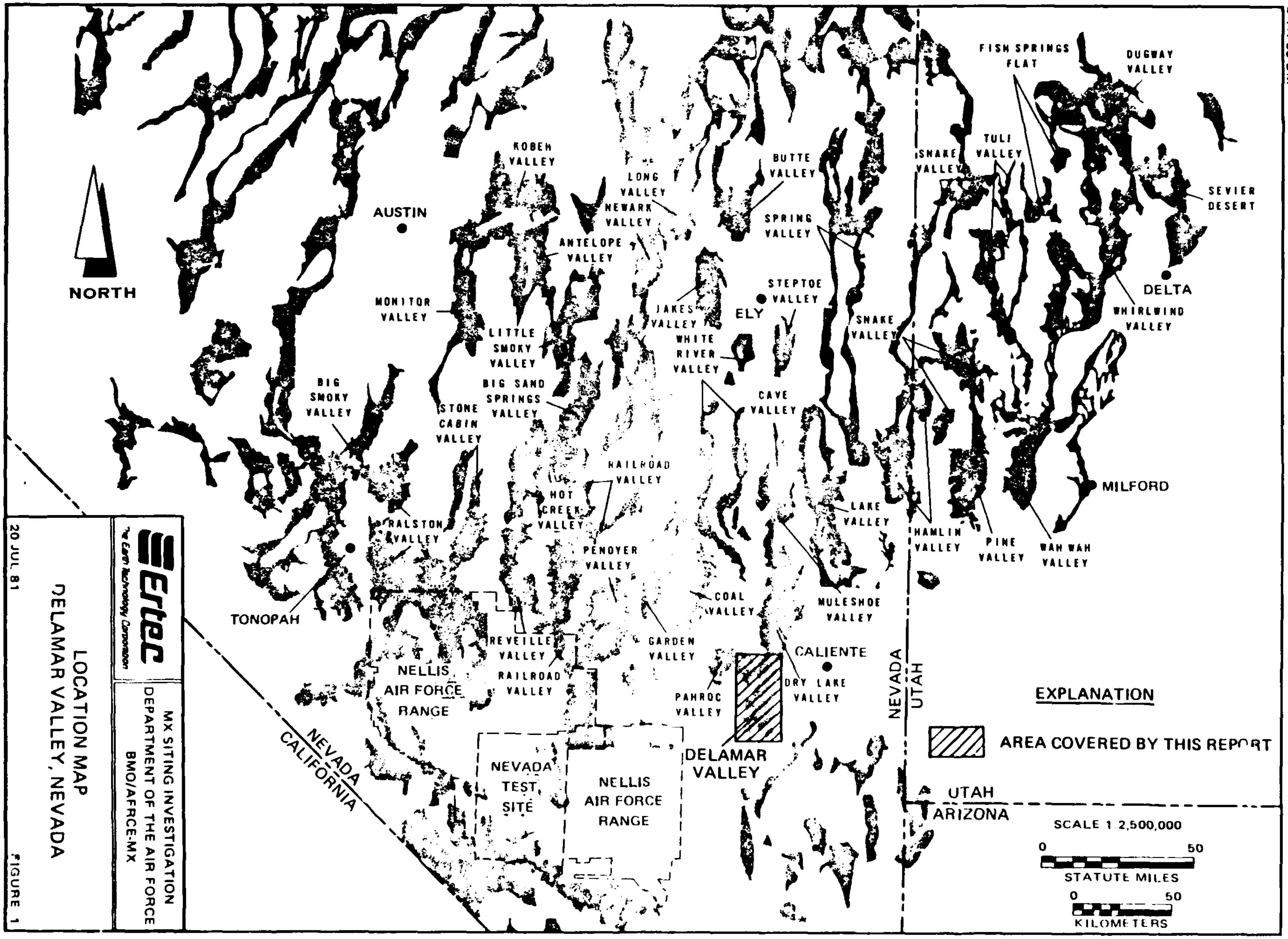
Gravity data from Delamar Valley and Pahroc Valley were studied together for the purpose of making a geological interpretation which includes estimates of the overall shape of the structural basin, the thickness of alluvial fill, and the location of concealed faults. The estimates will be useful in modeling the dynamic response of ground motion in the basin and in evaluating ground-water resources. Gravity data and interpretation covering the part of Pahroc Valley referred to as "Eastern Pahroc Valley" (that part east of South Pahroc Range) in our Verification report (Ertec, 1981b) are included in this report.

## 1.2 LOCATION

Delamar Valley is located in the southeastern part of Nevada (Figure 1) in Lincoln County. The town of Caliente, Nevada, is approximately 15 miles (24 km) east on U.S. Highway 93. Access throughout the valley is good due to an extensive network of well-maintained, unpaved roads. The valley is primarily undeveloped desert rangeland.

Delamar Valley is bounded on the east and southeast by the Delamar Mountains and on the west by the South Pahroc Range (Figure 2). U.S. Highway 93 forms the northern boundary and also separates Delamar Valley from Dry Lake Valley.

The area covered by this report lies between North latitudes 37°10' and 37°45' and West longitudes 114°40' and 115°05'. The

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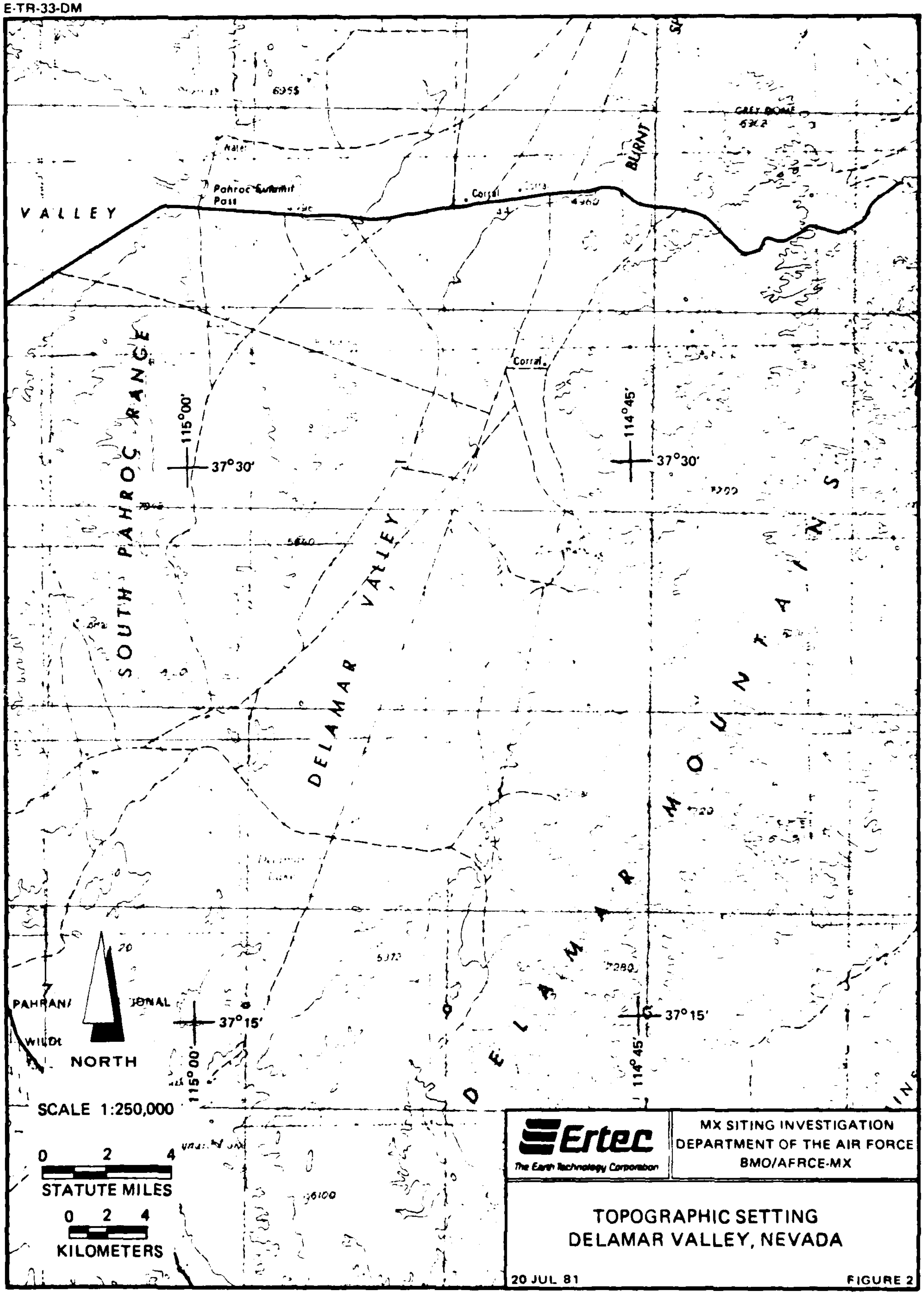
LOCATION MAP
DELAMAR VALLEY, NEVADA

20 JUL 81

FIGURE 1

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DELAMAR VALLEY, NEVADA

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FIGURE 2

valley is approximately 22 miles (35 km) long and the width varies from 8 to 12 miles (13 to 19 km).

## 1.3 SCOPE OF WORK

Five primary work elements were completed during this study. They are:

1. Computation and merging of terrain corrections;
2. Synthesis of regional and valley-specific geological data;
3. Evaluation of the regional field and residual separation;
4. Inverse modeling to estimate depth to bed rock; and
5. Interpretation of structural relationships.

The gravitational field within Delamar Valley was defined by measurements from 418 stations. The principal facts for these stations are listed in Appendix A2.0, and their distribution is shown in Drawing 1.0. The Defense Mapping Agency Aerospace Center (DMAAC) supplied 246 gravity stations from its library, and 172 new gravity measurements were made by the Defense Mapping Agency Hydrographic Topographic Center/Geodetic Survey Squardon (DMAHTC/GSS).

Delamar Valley and Pahroc Valley were studied together, with the results presented in separate reports. The rectangular region containing both valleys is the area between North latitudes 37° 10' and 37° 45' and West longitudes 114° 40' and 115° 15'. There are 516 gravity stations in the region. All were used to establish a common regional gravity trend for the two valleys.

Following residual separation, the geologic modeling of the two valleys was done independently. This report includes Delamar

Valley and Eastern Pahroc Valley (east of the South Pahroc Range).

## 2.0 GRAVITY DATA REDUCTION

DMAHTC/GSS obtained the basic observations for the new stations and reduced them to Simple Bouguer Anomalies (SBA) as described in Appendix A1.0. Up to three levels of terrain corrections were applied to the new stations to convert the SBA to the Complete Bouguer Anomaly (CBA). Only the first two levels of terrain corrections described below were applied to the library stations.

First, the DMAAC, St. Louis, Missouri, used its library of digitized terrain data and a computer program to calculate corrections out to 104 miles (167 km) from each station. When the program could not calculate the terrain effects near a station, a ring template was used to estimate the effect of terrain within approximately 3000 feet (914 m) of the station. The third level of terrain corrections was applied to those stations where relief of 10 feet (3 m) or more was observed within 130 feet (40 m). In these cases, the elevation differences were measured in the field at a distance of 130 feet (40 m) along six directions from the stations. These data were used to calculate the effect of the very near relief.

The principal facts and CBA values for the Delamar Valley stations are listed in Appendix A2.0.

## 3.0 GEOLOGIC SUMMARY

Delamar Valley is located within the Great Basin section of the Basin and Range physiographic province.

The Delamar Mountains, east of the valley, are composed primarily of middle Tertiary lavas (andesite and dacite) overlain by late Tertiary tuffs (Tschanz and Pampeyan, 1970; and Ekren and others, 1977). Some carbonates and siliceous clastic rocks (shales and quartzites) crop out in the central portion of the range near the Delamar mining district. On the west, the South Pahroc Range and the southern end of the North Pahroc Range are composed mainly of late Tertiary volcanic rocks.

Delamar Valley has a typical Basin and Range fault-block structure which is the result of late Tertiary and Quaternary block faulting due to tensional stresses directed in an east-west or northwest-southeast direction. The Pahroc fault is a zone of normal displacement near the foot of the South Pahroc Range. The scarp formed by the Pahroc fault separates the main part of the South Pahroc Range from alluvial flats and low volcanic hills to the east. Numerous small faults and joints trend both northerly and easterly in these low volcanic hills. This is thought to be an area of small fault blocks of varying and differential separation which step down to the east (Ertec, 1981a).

On the east side of Delamar Valley, a range bounding fault is interpreted in alluvial fans at the base of the Delamar Mountains.

This interpretation is based on a surface scarp in the alluvium (Ertec, 1981a). The northeast trending Buckhorn and Maynard Lake Faults bound the south end of Delamar Valley. They are major faults in the Pahranagat Shear Zone which is postulated to have from 10 to 12 miles (16 to 19 km) of pre-Quaternary left-lateral separation (Tschanz and Pampeyan, 1970).

The valley fill is divided into older and younger deposits. The older deposits consist of non-indurated to partly indurated alluvial-fan deposits containing primarily silt, sand, and gravel derived from adjacent highland areas. These deposits possibly include some rocks of volcanic origin. The younger valley fill includes clay, silt, sand, and gravel and is largely restricted to modern intermittent stream channels and playa areas. Depth to ground water ranges from 300 feet (91 m) in the northern part of the valley to more than 1000 feet (305 m) beneath the playa area in the southwestern part of the valley (Eakin, 1963).

# 4.0 INTERPRETATION

The basis of interpretation is the Complete Bouguer Anomaly (CBA). Contours of the CBA gravity field and the the gravity station locations are shown in Drawing 1.

Mathematical treatment of irregularly spaced data is inefficient. In order to simplify the computer processing, the station CBA and elevation data are reduced to sets of values at uniformly spaced points (nodes) in a geographic array, or grid. The values at each node are calculated from the station data within a circular area around the node. A bell-shaped weighting function assigns greater weight to the nearer data points. The node spacing is chosen to match the average data spacing. A 1.2-mile (2-km) grid spacing was used for this analysis.

## 4.1 REGIONAL-RESIDUAL SEPARATION

A fundamental part of the gravity interpretation is the separation of regional effects from the local effects of the valley and its fill. The CBA contains long wavelength components from deep and broad geologic structures extending far beyond the valley. These long wavelength components, called the regional gravity, were approximated by upward continuation of the gravity field. Upward continuations were made to successively higher elevations until the negative anomaly over the valley was essentially smoothed out. The final continuation was calculated for an elevation of 170,000 feet (51,816 m). This regional field was subtracted from the CBA and the resulting residual gravity anomaly was adjusted by a constant -2.0 milligals so

that the zero residual would approximately fit the existing rock outcrops.

## 4.2 DENSITY SELECTION

The construction of a geologic model from the residual anomaly requires selection of density values representative of the alluvial fill and of the underlying rock. Because only very generalized density information is available, the geologic interpretation of the gravity data can be only a coarse approximation. Five borings were drilled approximately 100 feet (30 m) into the alluvium during Verification studies (Ertec, 1981a). The average of the densities measured at the bottom of these borings was 2.0 $g/cm^3$. To account for compaction with depth (Woollard, 1962; and Grant and West, 1965), a density of 2.3 $g/cm^3$ was used in the modeling process.

The basement rocks underlying the alluvium of Delamar Valley are assumed to be similar to the rocks comprising the adjacent mountain ranges. These ranges are comprised of late Tertiary volcanic rocks unconformably overlying Paleozoic carbonate rocks. Published values for Paleozoic carbonate and clastic rocks typically range between 2.6 to 2.9 $g/cm^3$. The carbonate rocks in Nevada and Utah are commonly reported to be relatively high in density, on the order of 2.8 $g/cm^3$. This value was selected to represent the density of the basement rock. The density of siliceous to intermediate volcanic rocks generally ranges between 2.0 to 2.5 $g/cm^3$ depending on the degree of welding, compaction, and alteration. The older volcanics in the

Delamar Valley area are probably at the higher end of this density range, being approximately equivalent to dense alluvium or between the density of alluvium and the density of bed rock. The information available regarding the volume and characteristics of subsurface volcanic rocks in Delamar Valley is insufficient to make an estimate of their effect on the geologic model. The density contrast used for modeling was $-0.50\ g/cm^3$.

4.3 *MODELING*

Modeling was done with the aid of a computer program which iteratively calculates a three-dimensional solution of gravity anomaly data (Cordell, 1970). The gravity anomaly is represented by discrete values on a two-dimensional grid. The source of the anomaly (the volume of low-density valley fill) is represented by a set of vertical prism elements. The tops of the prisms lie in a common horizontal plane. The bottoms of the prisms collectively represent the bottom of the valley fill. Each prism has a cross-sectional area equal to one grid square and a uniform density. A grid square of 1.2 miles by 1.2 miles (2 km by 2 km) was selected as representative of the gravity station distribution. Computations were made for three iterations of mutually interactive prism adjustments. The root-mean-square error between the observed residual gravity field and the field calculated for the final model of the entire valley was less than 0.3 milligal.

The calculated thickness of the valley fill depends upon the residual anomaly and the density contrast (i.e., fill density

minus rock density) used. Since neither fill nor rock density is perfectly known, nor even uniform, the calculated thickness should be expected to contain a corresponding degree of uncertainty. A source of error in modeling Delamar Valley as a simple alluvium-basement rock system is the widespread volcanic material throughout the valley.

One seismic refraction line (DM-S-13) and one boring (WR-T1) were used as constraints in the modeling process. Their locations are marked in Drawing 2. The refraction line is located near the mountain flank. It found a 10,000 feet per second (3048 mps) velocity at a depth of 55 feet (17 m) which may represent the basement material. The alluvial fill material in the center of the valley is at least 1195 feet (364 m) thick according to the boring. The calculated thickness of fill, or interpreted depth to rock, is contoured in Drawing 2.

## 4.4 DISCUSSION OF RESULTS

The interpreted geologic structure of Delamar Valley is shown on the depth-to-rock contour map (Drawing 2). The interpretation is based on geologic information from published reports, analysis of aerial photographs, and geologic field reconnaissance as well as gravity data. The analysis of the gravity data included calculation of the second vertical derivative (SVD) of the CBA field. One property of the SVD is that its zero value marks the steepest gradients of the input CBA field. This property was used to guide the placement of faults in the structural interpretation. The interpreted faults represent only the major

fault systems which probably comprise many smaller fault zones. There may be other discrete faults that had a minor role in basin formation but with displacements so small that they were not resolved by the widely spaced gravity data available for this study.

The depth-to-rock contours define an elongate north-south trending basin coincident with the valley physiography. These contours (Drawing 1) define two north-trending subsurface basins. The northern basin is about 2500 feet (762m) deep and the southern basin is about 5000 feet (1524 m) deep.

The subsurface structural configuration of the northern part of Delamar Valley is complex compared to the relatively simple, deeply faulted grabens in the southern part of the valley and in Dry Lake Valley to the north. Structurally, it is a horst between these two grabens. A major fault system is indicated along the base of the Delamar Mountains by the gravity data but the Pahroc fault on the west side of the valley which is so prominent on the surface, is not clearly indicated. The positions of the Pahroc fault on Drawing 2 are based primarily on surface geologic and geomorphic data. The irregular gravity contours between the Pahroc fault and the Delamar Mountains suggest a relatively shallow basement (bed rock) complex of small fault blocks separated by numerous small-displacement, normal faults. These faults are not reflected in the gravity data because their small displacements do not create large density contrasts. This interpretation is consistent with surface

geology which shows numerous normal-faulted bedrock outcrops scattered throughout this part of the valley.

The southern basin contains a graben with a depth of 5000 feet (1524 m). The western side of the graben has a steeper linear gradient separating it from South Pahroc Range than is indicated on the east side along the Delamar Mountains. The eastern margin of the graben appears to be characterized by two major fault systems; one very near the base of the Delamar Range which is probably related to the basin-bounding fault farther to the north, and a shorter basin-ward fault. These north-south bounding faults appear to be terminated against the northeast trending Buckhorn Fault which is part of the Pahranagat Shear Zone.

## 5.0 CONCLUSIONS

Delamar Valley gravity data indicates the northern half of the valley is a horst buried by about 1500 feet (457 m) of alluvium. A graben about 5000 feet (1524 m) deep forms the southern half of the valley.

The calculated depths to carbonate bed rock are only approximate because little is known about the actual density distribution which has been represented by a simple two-density model. Also, the residual gravity anomaly is necessarily based on an interpreted regional field. An average density contrast of -0.50 $g/cm^3$ between the alluvium and bed rock was used to calculate the thickness of the valley-fill material. Future studies that acquire better density data or measure actual depths to bed rock in deep parts of the valley can be used to refine the gravity interpretation

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# APPENDIX A1.0

## GENERAL PRINCIPLES OF THE GRAVITY EXPLORATION METHOD

# A1.0 GENERAL PRINCIPLES OF THE GRAVITY EXPLORATION METHOD

## A1.1 GENERAL

A gravity survey involves measurement of differences in the gravitational field between various points on the earth's surface. The gravitational field values being measured are the same as those influencing all objects on the surface of the earth. They are generally associated with the force which causes a 1-gm mass to be accelerated at 980 cm/sec$^2$. This force is normally referred to as a 1-g force.

Even though in many applications the gravitational field at the earth's surface is assumed to be constant, small but distinguishable differences in gravity occur from point to point. In a gravity survey, the variations are measured in terms of milligals. A milligal is equal to 0.001 cm/sec$^2$ or 0.00000102 g. The differences in gravity are caused by geometrical effects, such as differences in elevation and latitude, and by lateral variations in density within the earth. The lateral density variations are a result of changes in geologic conditions. For measurements at the surface of the earth, the largest factor influencing the pull of gravity is the density of all materials between the center of the earth and the point of measurement.

To detect changes produced by differing geological conditions, it is necessary to detect differences in the gravitational field as small as a few milligals. To recognize changes due to

geological conditions, the measurements are "corrected" to account for changes due to differences in elevation and latitude.

Given this background, the basic concept of the gravitational exploration method, the anomaly, can be introduced. If, instead of being an oblate spheroid characterized by complex density variations, the earth were made up of concentric, homogeneous shells, the gravitational field would be the same at all points on the surface of the earth. The complexities in the earth's shape and material distribution are the reason that the pull of gravity is not the same from place to place. A difference in gravity between two points which is not caused by the effects of known geometrical differences, such as in elevation, latitude, and surrounding terrain, is referred to as an "anomaly."

An anomaly reflects lateral differences in material densities. The gravitational attraction is smaller at a place underlain by relatively low density material than it is at a place underlain by a relatively high density material. The term "negative gravity anomaly" describes a situation in which the pull of gravity within a prescribed area is small compared to the area surrounding it. Low-density alluvial deposits in basins such as those in the Nevada-Utah region produce negative gravity anomalies in relation to the gravity values in the surrounding mountains which are formed by more dense rocks.

The objective of gravity exploration is to deduce the variations in geologic conditions that produce the gravity anomalies identified during a gravity survey.

## A1.2 INSTRUMENTS

The sensing element of a LaCoste and Romberg gravimeter is a mass suspended by a zero-length spring. Deflections of the mass from a null position are proportional to changes in gravitational attraction. These instruments are sealed and compensated for atmospheric pressure changes. They are maintained at a constant temperature by an internal heater element and thermostat. The absolute value of gravity is not measured directly by a gravimeter. It measures relative values of gravity between one point and the next. Gravitational differences as small as 0.01 milligal can be measured.

## A1.3 FIELD PROCEDURES

The gravimeter readings were calibrated in terms of absolute gravity by taking readings twice daily at nearby USGS gravity base stations. Gravimeter readings fluctuate because of small time-related deviations due to the effect of earth tides and instrument drift. Field readings were corrected to account for these deviations. The magnitude of the tidal correction was calculated using an equation suggested by Goguel (1954):

$$C = P + N\cos\phi\,(\cos\phi + \sin\phi) + S\cos\phi\,(\cos\phi - \sin\phi)$$

where C is the tidal correction factor, P, N, and S are time-related variables, and $\phi$ is the latitude of the observation point. Tables giving the values of P, N, and S are published annually by the European Association of Exploration Geophysicists.

The meter drift correction was based on readings taken at a designated base station at the start and end of each day. Any difference between these two readings after they were corrected for tidal effects was considered to have been the result of instrumental drift. It was assumed that this drift occurred at a uniform rate between the two readings. Corrections for drift were typically only a few hundredths of a milligal. Readings corrected for tidal effects and instrumental drift represented the observed gravity at each station. The observed gravity values represent the total gravitational pull of the entire earth at the measurement stations.

## A1.4 DATA REDUCTION

Several corrections or reductions are made to the observed gravity to isolate the portion of the gravitational pull which is due to the crustal and near-surface materials. The gravity remaining after these reductions is called the "Bouguer Anomaly." Bouguer Anomaly values are the basis for geologic interpretation. To obtain the Bouguer Anomaly, the observed gravity is adjusted to the value it would have had if it had been measured at the geoid, a theoretically defined surface which approximates the surface of mean sea level. The difference between the "adjusted" observed gravity and the gravity at the geoid calculated for a theoretically homogeneous earth is the Bouguer Anomaly.

Four separate reductions, to account for four geometrical effects, are made to the observed gravity at each station to arrive at its Bouguer Anomaly value.

a. Free-Air Effect: Gravitational attraction varies inversely as the square of the distance from the center of the earth. Thus, corrections must be applied for elevation. Observed gravity levels are corrected for elevation using the normal vertical gradient of:

$$FA = -0.09406 \text{ mg/ft } (-0.3086 \text{ milligals/meter})$$

where FA is the free-air effect (the rate of change of gravity with distance from the center of the earth). The free-air correction is positive in sign since the correction is opposite the effect.

b. Bouguer Effect: Like the free-air effect, the Bouguer effect is a function of the elevation of the station, but it considers the influence of a slab of earth materials between the observation point on the surface of the earth and the corresponding point on the geoid (sea level). Normal practice, which is to assume that the density of the slab is 2.67 grams per cubic centimeter was followed in these studies. The Bouguer correction ($B_c$), which is opposite in sign to the free-air correction, was defined according to the following formula.

$$B_c = 0.01276 \ (2.67) \ h_f \text{ (milligals per foot)}$$

$$B_c = 0.04185 \ (2.67) \ h_m \text{ (milligals per meter)}$$

where $h_f$ is the height above sea level in feet and $h_m$ is the height in meters.

c. Latitude Effect: Points at different latitudes will have different "gravities" for two reasons. The earth (and the geoid) is spheroidal, or flattened at the poles. Since points at higher latitudes are closer to the center of the earth than points near the equator, the gravity at the higher latitudes is larger. As the earth spins, the centrifugal acceleration causes a slight decrease in the measured gravity. At the higher latitudes where the earth's circles of latitude are smaller, the centrifugal acceleration diminishes. The gravity formula for the Geodetic Reference System, 1967, gives the theoretical value of gravity at the geoid as a function of latitude. It is:

$$g = 978.0381\ (1 + 0.0053204 \sin^2 \phi - 0.0000058 \sin^2 2\phi) \text{ gals}$$

where $g$ is the theoretical acceleration of gravity and $\phi$ is the latitude in degrees. The positive term accounts for the spheroidal shape of the earth. The negative term adjusts for the centrifugal acceleration.

The previous two corrections (free air and Bouguer) have adjusted the observed gravity to the value it would have had at the geoid (sea level). The theoretical value at the geoid for the latitude of the station is then subtracted from the adjusted observed gravity. The remainder is called the Simple Bouguer Anomaly (SBA). Most of this gravity represents the effect of material beneath the station, but part of it may be due to irregularities in terrain (upper part of the Bouguer slab) away from the station.

d. *Terrain Effect:* Topographic relief around the station has a negative effect on the gravitational force at the station. A nearby hill has upward gravitational pull and a nearby valley contributes less downward attraction than a nearby material would have. Therefore, the corrections are always positive. Corrections are made to the SBA when the terrain effects were 0.1 milligal or larger. Terrain corrected Bouguer values are called the Complete Bouguer Anomaly (CBA). When the CBA is obtained, the reduction of gravity at individual measurement points (stations) is complete.

## A1.5 INTERPRETATION

To interpret the gravity data, the portion of the CBA that might be caused by the light-weight, basin-fill material must be separated from that caused by the heavier bedrock material which forms the surrounding mountains and presumably the basin floor. The first step is to create a regional field. A regional field is an estimation of the values the CBA would have had if the light-weight sediments (the anomaly) had not been there. Since the valley-fill sediments are absent at the stations read in the mountains, one approach is to use the CBA values at bedrock stations as the basis for constructing a second order polynomial surface to represent a regional field over the valley.

Where there are insufficient bedrock stations to define a satisfactory regional trend, another approach is to estimate the regional by the process of upward continuation of the CBA field.

In Potential Theory, a field normal to a surface, regardless of its actual source, may be considered as originating in an areal distribution of mass on that surface. If the field strength is known the surface density of mass (grams per square centimeter) can be calculated. The observed gravity field at the surface of the earth approximately fulfills the requirements of this theory: thus the observed (Bouguer anomaly) field can be used to compute a surficial distribution of mass which would reproduce the field, and most importantly, account for the gravity field anywhere above the surface of observation. On this basis, the Bouguer anomaly field is readily "continued" to level surfaces above the ground.

An important property of such "upward continuation" is that the resultant field (which can be represented by a contour map), with increasing altitudes of continuation, changes more with respect to shallow sources than it does with respect to deeper sources. The anomalous parts of the field ascribed to shallow density distribution tend to vanish as the continuation is carried upward whereas the field produced by deeper sources changes only slightly, so that upward continuations produce "regional"-type fields.

The difference between the CBA and the regional field is called the "residual" field or residual anomaly. The residual field is the interpreter's estimation of the gravitational effect of the geologic anomaly. The zero value of the residual anomaly is not exactly at the rock outcrop line but at some distance on the

"rock" side of the contact. The reason for this is found in the explanation of the terrain effect. There is a component of gravitational attraction from material which is not directly beneath a point.

If the "regional" is well chosen, the magnitude of the residual anomaly is a function of the thickness of the anomalous (fill) material and the density contrast. The density contrast is the difference in density between the alluvial and bedrock material. If this contrast were known, an accurate calculation of the thickness could be made. In most cases, the densities are not well known and they also vary within the study area. In these cases, it is necessary to use typical densities for materials similar to those in the study area.

If the selected average density contrast is smaller than the actual density contrast, the computed depth to bedrock will be greater than the actual depth and vice-versa. The computed depth is inversely proportional to the density contrast. A ten percent error in density contrast produces a ten percent error in computed depth. An iterative computer program is used to calculate a subsurface model which will yield a gravitational field to match (approximately) the residual gravity anomaly.

The second vertical derivative (SVD) of gravitational field is used to aid the interpreter in evaluating the subsurface mass distribution. Once the CBA field has been projected onto a uniform grid system, its SVD at the grid nodes is readily computed.

In accordance with Laplace's Equation in Free Space, the negative of the second vertical derivative is equal to the sums of the second derivatives in the x-direction and in the y-direction. The second vertical derivative is an indication of the curvature of the Bouguer anomaly field. In particular the zero-value of the SVD indicates the inflection in the field as it changes from "concave-upward" (algebraically negative SVD) to "convex-upward" (algebraically positive SVD). In a general way the zero SVD falls on the tightest contours of the field and where contours are nearly parallel its location can be established by eye. However, where contours diverge, converge, or change direction this is not always so readily done. The zero SVD contour line may be an indicator of a line of faulting, the pinchout of a stratum, truncation of a stratum at an unconformity or merely a marked change in shape or in density of a geologic unit.

APPENDIX A2.0

DELAMAR VALLEY, NEVADA

GRAVITY DATA

DELAMAR VALLEY GRAVITY DATA

| STATION IDENT. | LAT. DEG MIN | LONG. DEG MIN ELEV. +CODE | TER-COR. IN/OUT | NORTH UTM | EAST UTM OBSV GRAV THEO GRAV | FAA | CBA +1000 |
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| 6746 | 371071 | 114414334039T | 0 | 160411697 | 70503155968192030 | -4040 | 84510 |
| 6741 | 371113 | 114461338901T | 0 | 233411758 | 69836153909192091 | -1560 | 85433 |
| 6747 | 371163 | 114440035312T | 0 | 217411867 | 70118155373192171 | -3570 | 84597 |
| 6830 | 371205 | 114572260499T | 0 | 1815411891 | 68161138404192225 | 3070 | 84275 |
| 6745 | 371214 | 114401635279T | 0 | 189411966 | 70684155029192238 | -4020 | 84139 |
| 6837 | 371292 | 114506356030T | 0 | 327412073 | 69132143047192351 | 3390 | 84627 |
| 6831 | 371325 | 114538556680T | 0 | 369412124 | 63655142694192399 | 3600 | 84659 |
| 6836 | 371360 | 114470450869T | 0 | 369412211 | 69660145986192450 | 1370 | 84409 |
| 6939 | 371419 | 114413539091T | 0 | 209412341 | 70499152233192535 | -3520 | 83349 |
| 6835 | 371585 | 114513559701T | 0 | 535412611 | 68940140156192776 | 3530 | 83715 |
| 6832 | 371591 | 114577550089T | 0 | 338412603 | 68067145360192785 | -300 | 82946 |
| 6845 | 371708 | 114433356831T | 0 | 563412868 | 70193140614192955 | 1110 | 83303 |
| 6910 | 371763 | 114491550639T | 0 | 223412949 | 69331144933193035 | -410 | 82523 |
| 6909 | 371768 | 114564445679T | 0 | 138412935 | 63254148413193042 | -1650 | 82928 |
| 6908 | 371907 | 114574345522T | 0 | 134413188 | 68102148428193244 | -1990 | 82624 |
| 6913 | 371963 | 114513347841T | 0 | 153413312 | 69001146853193325 | -1460 | 82373 |
| 6638 | 371998 | 114553045522T | 0 | 139413364 | 63413147762193376 | -2780 | 81829 |
| 6911 | 372067 | 114472355926T | 0 | 291413518 | 69602142583193476 | 1710 | 82941 |
| 6912 | 372036 | 114499649800T | 0 | 209413544 | 69198145951193504 | -700 | 82529 |
| 6907 | 372109 | 114577546660T | 0 | 113413561 | 68047147790193537 | -1350 | 82353 |
| 6846 | 372115 | 114419172779T | 0 | 1109413626 | 70385130831193546 | 5730 | 82039 |
| 6628 | 372247 | 114541045561T | 0 | 134413828 | 68580146796193738 | -4070 | 80524 |
| 6645 | 372272 | 114502548426T | 0 | 148413887 | 69147146010193774 | -2200 | 81428 |
| 6349 | 372396 | 114449565499T | 0 | 640414135 | 69924137348193955 | 5000 | 83320 |
| 6624 | 372400 | 114576948179T | 0 | 143414099 | 68044146864193960 | -1770 | 81943 |
| 6623 | 372478 | 114595653369T | 0 | 236414238 | 67765144373194074 | 490 | 82546 |
| 6639 | 372435 | 114529446050T | 0 | 137414272 | 68741146378194034 | -4380 | 80057 |
| 6333 | 372494 | 114459060449T | 0 | 318414313 | 69779140370194097 | 3130 | 82348 |
| 6644 | 372493 | 114497548442T | 0 | 156414307 | 69211146349194103 | -2180 | 81456 |
| 6625 | 372521 | 114560546690T | 0 | 121414328 | 68281147335194136 | -2370 | 81321 |
| 6627 | 372658 | 114529746529T | 0 | 135414592 | 63729146626194336 | -3930 | 80335 |
| 6640 | 372631 | 114520147110T | 0 | 124414637 | 68870146532194369 | -3520 | 80534 |
| 6350 | 372690 | 114440461250T | 0 | 267414682 | 70045140261194362 | 3490 | 82587 |
| 6643 | 372696 | 114437351621T | 0 | 177414676 | 69353144849194391 | -950 | 81537 |
| 6626 | 372732 | 114553846621T | 0 | 128414721 | 68371147754194443 | -2820 | 81409 |
| 6641 | 372834 | 114510345701T | 0 | 126415016 | 69006146052194665 | -2790 | 80726 |
| 6642 | 372925 | 114472856331T | 0 | 226415105 | 69557142784194724 | 1090 | 82106 |
| 2327 | 372956 | 114572052100T | 0 | 151415129 | 68094145084194769 | -660 | 81721 |
| 2326 | 372996 | 114429069390T | 0 | 429415252 | 70199134299194827 | 4740 | 81519 |
| 1902 | 373262 | 114400662740T | 0 | 303415754 | 70605138533195215 | 2330 | 253 |

# DELAMAR VALLEY GRAVITY DATA

| STATION IDENT. | LAT. DEG MIN | LONG. DEG MIN / ELEV. +CODE | TER-COR. IN/OUT | NORTH UTM / EAST UTM / OBSV GRAV / THEO GRAV | FAA | CBA +1000 |
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| 1358 | 373570 | 114412062310T | 0 | 218416319 70424140203195663 | 3140 | 82129 |
| 7142 | 373650 | 114426058957T | 0 | 194416462 70214142829195780 | 2490 | 82594 |
| 1002 | 373661 | 114537149419T | 0 | 99416444 68579147126195796 | -2180 | 81069 |
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| 0990 | 373674 | 114522548529T | 0 | 100416473 68793147418195815 | -2650 | 80870 |
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| 0424 | 373724 | 114404960259T | 0 | 179416607 70521142383195888 | 3170 | 82509 |
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| 0998 | 373732 | 114582250899T | 0 | 108416561 67912147196195899 | -320 | 81925 |
| 0996 | 373736 | 114460051191T | 0 | 159416609 69710147775195905 | 20 | 82729 |
| 1359 | 373747 | 114456751194T | 0 | 172416631 69758147372195921 | 100 | 82832 |
| 0989 | 373776 | 114503648100T | 0 | 100416666 68993148018195963 | -2690 | 81000 |
| 0299 | 373793 | 114431458451T | 0 | 262416725 70128143453195988 | 2440 | 82772 |
| 0301 | 373802 | 114407862290T | 0 | 251416750 70475141443196001 | 4030 | 83041 |
| 0300 | 373808 | 114413661470T | 0 | 355416757 70316141882196010 | 3690 | 83085 |
| 0298 | 373818 | 114443756929T | 0 | 260416767 69946144521196025 | 2040 | 82890 |
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| 0937 | 373825 | 114464349272T | 0 | 124416772 69643148247196035 | -1440 | 81884 |
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| 0986 | 373862 | 114507348041T | 0 | 101416826 69039148577196089 | -2320 | 81401 |
| 0316 | 373884 | 114407765931T | 0 | 570416902 70472138779196121 | 4720 | 82790 |
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| 0939 | 373895 | 114460948629T | 0 | 122416903 69690148718196137 | -1670 | 81862 |

DELAMAR VALLEY GRAVITY DATA

| SSTATION IDENT. | LAT. DEG MIN | LONG. DEG MIN ELEV. +CODE | TER-COR. IN/OUT | NORTH UTM | EAST UTM OBSV GRAV THEO GRAV | FAA | CBA +1000 |
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| 0940 | 373907 | 114450249800T | 0 | 162416929 | 69346149068196154 | -240 | 82942 |
| 0941 | 373907 | 114472447539T | 0 | 109416921 | 69520148379196154 | -2550 | 81339 |
| 0893 | 373907 | 114483447201T | 0 | 103416917 | 69358148730196154 | -3020 | 80983 |
| 0984 | 373907 | 114516249600T | 0 | 114416906 | 68376148018196154 | -1480 | 81724 |
| 0932 | 373912 | 114494947119T | 0 | 102416923 | 69189149207196162 | -2630 | 81402 |
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| 0311 | 373921 | 114435951801T | 0 | 159416960 | 70056143346196175 | 890 | 83389 |
| 0860 | 373936 | 114565556381T | 166 | 279416943 | 68135144336196197 | 1170 | 82395 |
| 0942 | 373939 | 114453848271T | 0 | 119416985 | 69719149030196201 | -1710 | 81949 |
| 0963 | 373949 | 114506047539T | 0 | 130416957 | 69024149037196216 | -2410 | 81510 |
| 0312 | 373959 | 114440850699T | 0 | 154417028 | 69982148377196230 | 330 | 83204 |
| 0357 | 373960 | 114554255991T | 0 | 195416992 | 68315145318196232 | 1750 | 82555 |
| 0856 | 373971 | 114541853100T | 0 | 143417016 | 68497146797196248 | 490 | 82533 |
| 0313 | 373982 | 114431252021T | 0 | 159417074 | 70122148156196264 | 820 | 83249 |
| 0943 | 373994 | 114450248921T | 0 | 126417090 | 69843149348196281 | -910 | 82526 |
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| 0977 | 374037 | 114504547631T | 0 | 104417150 | 69042149077196344 | -2460 | 81404 |
| 0874 | 374043 | 114557760130T | 0 | 332417144 | 68260142423196353 | 2670 | 82492 |
| 0326 | 374059 | 114424652779T | 0 | 171417219 | 70216147783196376 | 1050 | 83231 |
| 7139 | 374060 | 114425052874T | 0 | 168417221 | 70210147815196377 | 1160 | 83318 |
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| 0947 | 374032 | 114462546680T | 0 | 105417248 | 69658149290196409 | -3210 | 80975 |
| 0948 | 374083 | 114472346339T | 0 | 99417247 | 69514149040196411 | -3780 | 80519 |
| 0895 | 374083 | 114483446391T | 0 | 95417243 | 69351148953196411 | -3810 | 80465 |
| 0975 | 374087 | 114493646719T | 0 | 100417247 | 69201148999196417 | -3470 | 80700 |
| 0850 | 374090 | 114543155039T | 0 | 166417236 | 68473145993196421 | 1340 | 82746 |
| 0334 | 374114 | 114425352211T | 0 | 150417321 | 70203148170196456 | 820 | 83170 |
| 0974 | 374113 | 114504147720T | 0 | 97417300 | 69045149114196462 | -2460 | 81367 |
| 0344 | 374154 | 114416153881T | 0 | 168417398 | 70337147153196514 | 1320 | 83118 |
| 0911 | 374167 | 114451747349T | 0 | 110417409 | 69813149823196533 | -2170 | 81790 |
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| 0917 | 374169 | 114469646070T | 0 | 97417407 | 69550149121196536 | -4350 | 80307 |
| 0913 | 374170 | 114457646460T | 0 | 106417413 | 69726149908196539 | -2920 | 81336 |
| 0914 | 374170 | 114460246299T | 0 | 103417412 | 69688149699196535 | -3280 | 81023 |

# DELAMAR VALLEY GRAVITY DATA

| STATION IDENT. | LAT. DEG MIN | LONG. DEG MIN ELEV. +CODE | TER-COR. IN | TER-COR. OUT NORTH UTM | EAST UTM OBSV GRAV THEO GRAV | FAA | CBA +1000 |
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| 7128 | 374170 | 114503547566T | 0 | 97417397 | 69051149351196538 | -2440 | 81437 |
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| 0933 | 374172 | 114516248901T | 0 | 103417396 | 68365148876196541 | -1660 | 81768 |
| 0924 | 374173 | 114492846601T | 0 | 95417406 | 69209149153196542 | -3550 | 80645 |
| 0929 | 374173 | 114505747779T | 0 | 99417402 | 69019149253196542 | -2340 | 81459 |
| 0925 | 374174 | 114495746821T | 0 | 93417407 | 69166149209196544 | -3290 | 80833 |
| 0930 | 374174 | 114508347979T | 0 | 100417403 | 68951149220196544 | -2190 | 81550 |
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| 0337 | 374176 | 114447147999T | 0 | 121417427 | 69380149904196546 | -1490 | 82261 |
| 0932 | 374176 | 114513448540T | 0 | 104417405 | 68906149043196546 | -1840 | 81704 |
| 0934 | 374177 | 114520449491T | 0 | 111417404 | 68803149630196543 | -1360 | 81571 |
| 0935 | 374177 | 114523149339T | 0 | 118417403 | 68763148555196548 | -1110 | 82008 |
| 0343 | 374181 | 114427851381T | 0 | 138417444 | 70163148300196554 | 570 | 83196 |
| 0345 | 374202 | 114412855509T | 0 | 178417488 | 70383146205196584 | 1830 | 83098 |
| 1919 | 374203 | 114503747520T | 0 | 97417458 | 69047149337196586 | -2500 | 81397 |
| 7137 | 374210 | 114456046394T | 0 | 107417437 | 69748150207196596 | -2740 | 81547 |
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| 0873 | 374221 | 114534353041T | 0 | 147417481 | 68597147011196612 | 290 | 82347 |
| 0950 | 374232 | 114463745860T | 0 | 99417525 | 69634149428196628 | -4060 | 80399 |
| 0355 | 374251 | 114406360010T | 0 | 233417581 | 70476142862196656 | 2650 | 82423 |
| 0350 | 374256 | 114443243022T | 0 | 134417577 | 69934150252196663 | -1240 | 82514 |
| 0951 | 374259 | 114472145840T | 0 | 94417572 | 69509149179196668 | -4370 | 80094 |
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| 0952 | 374278 | 114456145981T | 0 | 104417613 | 69743150294196695 | -3140 | 81274 |
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| 7144 | 374310 | 114567557854T | 0 | 234417635 | 68105144290196742 | 1960 | 82524 |

# DELAMAR VALLEY GRAVITY DATA

| STATION IDENT. | LAT. DEG MIN | LONG. DEG MIN ELEV. +CODE | TER-COR. IN/OUT | NORTH UTM | EAST UTM OBSV GRAV THEO GRAV | FAA | CBA +1000 |
|---|---|---|---|---|---|---|---|
| 0382 | 374313 | 114537653081T | 20 | 156417650 | 68544147212196746 | 390 | 82476 |
| 0371 | 374323 | 114416861099T | 0 | 673417710 | 70319142254196761 | 2990 | 82833 |
| 0372 | 374324 | 114426752080T | 0 | 149417708 | 70173148433196762 | 660 | 83059 |
| 0374 | 374345 | 114438947710T | 0 | 141417743 | 69993150679196793 | -1030 | 82541 |
| 0376 | 374345 | 114449746089T | 0 | 111417739 | 69334150649196793 | -2790 | 81601 |
| 0954 | 374346 | 114460745801T | 0 | 97417737 | 69673149463196794 | -4240 | 80227 |
| 0955 | 374346 | 114471745801T | 0 | 91417733 | 69511149205196794 | -4500 | 79971 |
| 0966 | 374348 | 114494046381T | 0 | 96417729 | 69183149547196797 | -3620 | 80656 |
| 0968 | 374348 | 114510547759T | 0 | 110417724 | 68941149855196797 | -2010 | 81810 |
| 0969 | 374348 | 114516148350T | 0 | 117417722 | 68359149656196797 | -1660 | 81967 |
| 0967 | 374363 | 114501546890T | 0 | 100417754 | 69073149904196819 | -2300 | 81300 |
| 0375 | 374381 | 114437148159T | 0 | 140417810 | 70018150851196845 | -690 | 83030 |
| 0370 | 374401 | 114417052192T | 0 | 150417854 | 70312148606196875 | 620 | 83180 |
| 0381 | 374401 | 114425950249T | 0 | 167417851 | 70131149686196875 | 80 | 83117 |
| 7130 | 374405 | 114500046765T | 1 | 95417833 | 69093150065196860 | -2820 | 81326 |
| 0957 | 374430 | 114452145951T | 0 | 101417895 | 69795150147196917 | -3540 | 80891 |
| 0387 | 374430 | 114533051319T | 0 | 152417868 | 68607148532196917 | -110 | 82542 |
| 0958 | 374432 | 114473145801T | 0 | 89417892 | 69437149233196920 | -4600 | 79869 |
| 0964 | 374432 | 114506247310T | 0 | 105417830 | 69001150272196920 | -2140 | 81825 |
| 0389 | 374432 | 114551456142T | 0 | 197417865 | 68337146113196920 | 2000 | 83057 |
| 0386 | 374434 | 114527250341T | 0 | 131417877 | 68692149063196923 | -500 | 82461 |
| 7115 | 374435 | 114433743576T | 0 | 140417911 | 70065150609196924 | -610 | 82960 |
| 0379 | 374437 | 114434143550T | 0 | 123417915 | 70059150557196927 | -700 | 82868 |
| 0365 | 374442 | 114409954370T | 0 | 131417933 | 70415147171196934 | 1370 | 82971 |
| 7151 | 374450 | 114409654281T | 0 | 129417948 | 70419147155196946 | 1260 | 82899 |
| 0962 | 374457 | 114500346699T | 0 | 99417929 | 69086150158196956 | -2870 | 81309 |
| 0378 | 374459 | 114444346499T | 0 | 103417952 | 69901150969196959 | -2250 | 81998 |
| 0390 | 374465 | 114537952021T | 0 | 164417931 | 68534148163196958 | 120 | 82554 |
| 0380 | 374480 | 114425555000T | 0 | 285417997 | 70184146452196990 | 1190 | 82725 |
| 0369 | 374491 | 114413159659T | 0 | 521418022 | 70365143179197006 | 2280 | 82471 |
| 0960 | 374495 | 114458845869T | 0 | 93418013 | 69694149609197012 | -4250 | 80193 |
| 0959 | 374495 | 114478545801T | 0 | 88418006 | 69405149297197012 | -4630 | 79838 |
| 0961 | 374499 | 114521249121T | 0 | 123417999 | 68777149752197018 | -1060 | 82313 |
| 2227 | 371020 | 115 7029990T | 0 | 285411538 | 67653158762191956 | -4970 | 85083 |
| 7 | 371210 | 115 42032011T | 0 | 165411879 | 67128156124192232 | -5990 | 83255 |
| 6925 | 371216 | 115 40632011T | 0 | 164411890 | 67149156137192241 | -5990 | 83264 |
| 1369 | 371225 | 115 27331450T | 0 | 201411911 | 67345156920192254 | -5740 | 83741 |
| 6819 | 371340 | 115 4139619T | 0 | 200412131 | 67684152455192421 | -2690 | 84000 |
| 2226 | 371340 | 115 47031969T | 0 | 174412117 | 67049156062192421 | -6280 | 82994 |
| 6818 | 371580 | 115 19045522T | 0 | 294412570 | 67454143606192759 | -1330 | 83434 |

# DELAMAR VALLEY GRAVITY DATA

| STATION IDENT. | LAT. DEG MIN | LONG. DEG MIN | ELEV. +CODE | TER-COR. IN/OUT | NORTH UTM | EAST UTM | OBSV GRAV | THEO GRAV | FAA | CBA +1000 |
|---|---|---|---|---|---|---|---|---|---|---|
| 6904 | 371755 | 115 | 4533667OT | 0 | 157412885 | 670591543241930023 | | | -4200 | 83457 |
| 6817 | 371853 | 115 | 12146860T | 0 | 256413077 | 67546147327193165 | | | -1750 | 82526 |
| 6905 | 371908 | 115 | 33139039T | 0 | 118413170 | 67159152663193245 | | | -3850 | 82948 |
| 6906 | 372058 | 115 | 29241880T | 0 | 114413451 | 67285151074193463 | | | -2980 | 82844 |
| 6621 | 372201 | 115 | 37643599T | 0 | 160413712 | 67156150523193671 | | | -2130 | 83160 |
| 6622 | 372239 | 115 | 1645801T | 0 | 125413794 | 67686148619193726 | | | -2010 | 82485 |
| 6619 | 372308 | 115 | 25247192T | 0 | 170413914 | 67335149234193827 | | | -190 | 83886 |
| 6618 | 372579 | 115 | 39750030T | 0 | 248414411 | 67110146971194221 | | | -130 | 83008 |
| 2319 | 372804 | 115 | 7059521T | 0 | 408414837 | 67584141190194548 | | | 2620 | 82748 |
| 2318 | 373158 | 115 | 5055341T | 0 | 301415492 | 67500143601195063 | | | 590 | 82031 |
| 2317 | 373335 | 115 | 5052920T | 0 | 220415820 | 67593145345195321 | | | -190 | 81990 |
| 1362 | 373615 | 115 | 25546398T | 0 | 189416331 | 67280149549195729 | | | -2520 | 81839 |
| 2307 | 373734 | 115 | 5048862T | 0 | 110416557 | 67577148620195902 | | | -1310 | 82130 |
| 1874 | 374067 | 115 | 15054730T | 0 | 235417170 | 67417145574196388 | | | 700 | 82275 |
| 2315 | 374444 | 115 | 19050751T | 0 | 114417866 | 67343149246196937 | | | 40 | 82664 |
| 0928 | 374172 | 1145037 | 0 | 0 | 276417400 | 69049149328196541 | | | -2490 | 81290 |
| DMV001 | 373567 | 115 69 | 5754S | 252 | 466416248 | 67556142189195659 | | | 685 | 81778 |
| DMV002 | 373314 | 115 129 | 6483C | 671 | 696415778 | 67477136925195290 | | | 2654 | 81909 |
| DMV004 | 373117 | 115 156 | 7668S10351910415412 | | | 67401123200195004 | | | 5376 | 82217 |
| PRV013 | 373936 | 115 492 | 4615S | 1 | 102416917 | 66919150208196197 | | | -2556 | 81306 |
| PRV077 | 372802 | 115 392 | 6284S | 227 | 599414823 | 67109138961194545 | | | 3561 | 82954 |
| PRV080 | 372552 | 115 58 | 6570S | 7581240414371 | | 67611135608194182 | | | 3265 | 82855 |
| DMV066 | 372576 | 1144690 | 6226Y | 286 | 568414461 | 69628138875194216 | | | 3258 | 82877 |
| DMV071 | 372761 | 1144750 | 5447Y | 42 | 227414801 | 69532143814194486 | | | 593 | 82284 |
| DMV102 | 372296 | 1145499 | 4561Y | 0 | 114413916 | 68446147175193809 | | | -3711 | 80847 |
| DMV104 | 372501 | 1145480 | 4593S | 0 | 114414295 | 68466147311194107 | | | -3571 | 80877 |
| DMV105 | 372595 | 1145500 | 4625Y | 1 | 114414469 | 68433147518194244 | | | -3201 | 81140 |
| DMV120 | 372373 | 1145877 | 5041Y | 38 | 175414040 | 67896145436193917 | | | -989 | 82031 |
| DMV121 | 372255 | 1145746 | 5547S | 183 | 578413832 | 69084141549193750 | | | 6 | 81849 |
| DMV131 | 372229 | 1145624 | 5016S | 598 | 259413788 | 68265144838193712 | | | -1667 | 82082 |
| DMV135 | 371678 | 1145687 | 4600C | 2 | 154412767 | 63194148120192911 | | | -1501 | 82966 |
| DMV146 | 372063 | 1145356 | 4600C | 0 | 126413489 | 68667147325193471 | | | -2855 | 81581 |
| DMV147 | 371937 | 1145393 | 4624V | 0 | 128413255 | 68618147940193238 | | | -1331 | 82526 |
| DMV169 | 372135 | 1144570 | 6517S | 379 | 603413742 | 69822136276193648 | | | 3968 | 82723 |
| DMV171 | 371990 | 1144826 | 6436S | 3631038413372 | | 69453136541193365 | | | 3754 | 83209 |
| DMV400 | 373393 | 1144563 | 6418S | 408 | 382415976 | 69779137838195405 | | | 2889 | 81789 |
| PRV024 | 374043 | 1145986 | 6652S | 6341229417131 | | 67659137133196353 | | | 3391 | 82566 |
| PRV204 | 372661 | 115 177 | 6486C | 15 | 776414569 | 67432137446194340 | | | 4154 | 82823 |
| PRV203 | 373033 | 115 453 | 6282C | 145 | 547415249 | 67011139023194881 | | | 3269 | 82534 |
| PRV202 | 373258 | 115 410 | 5742C | 9 | 357415666 | 67065142604195209 | | | 1437 | 82219 |

# DELAMAR VALLEY GRAVITY DATA

| STATION IDENT. | LAT. DEG MIN | LONG. DEG MIN | ELEV. +CODE | TER-COR. IN/OUT NORTH UTM | EAST UTM OBSV GRAV THEO GRAV | FAA | CBA +1000 |
|---|---|---|---|---|---|---|---|
| PRV078 | 372901 | 115 178 | 7950V | 482460415013 | 67421126359194689 | 6505 | 81898 |
| PRV043 | 373195 | 115 438 | 5592C | 30 368415547 | 66953143499195117 | 1012 | 82337 |
| PRV035 | 373361 | 115 379 | 5423C | 12 261415857 | 67107145035195359 | 715 | 82491 |
| PRV021 | 374221 | 115 55 | 5792S | 6 293417458 | 67550144017196612 | 1913 | 82462 |
| PRV020 | 374134 | 115 201 | 5650S | 20 343417385 | 67337144336196558 | 1003 | 82096 |
| PRV015 | 374073 | 115 313 | 5636S | 21 513417176 | 67170144179196396 | 827 | 82143 |
| PRV023 | 373732 | 115 103 | 5086S | 15 128416645 | 67497147342195972 | -765 | 82031 |
| PRV022 | 373952 | 115 131 | 5128S | 6 141416958 | 67449148323196220 | 364 | 83021 |
| DMV153 | 371845 | 1145152 | 5109S | 12 220413093 | 68977145409193154 | 338 | 83145 |
| DMV151 | 371537 | 1145131 | 5965S | 19 669412524 | 69021140409192707 | 3344 | 84187 |
| DMV140 | 371837 | 1145492 | 4698S | 3 170413160 | 68473147606193215 | -1396 | 82753 |
| DMV126 | 371592 | 1145774 | 5009S | 17 350412605 | 68069145363192786 | -282 | 83001 |
| DMV119 | 372604 | 1145888 | 5542Y | 1 404414473 | 67860142654194257 | 556 | 82059 |
| DMV117 | 372956 | 1145724 | 5210Y | 2 152415129 | 69088144642194769 | -1094 | 81290 |
| DMV113 | 372403 | 1145591 | 4789Y | 5 169414111 | 68306146735193965 | -2160 | 81680 |
| DMV063 | 373046 | 1144537 | 6704S | 8 517415335 | 69333136028194900 | 4228 | 81837 |
| DMV065 | 372793 | 1144575 | 7095Y | 301088414866 | 69788133179194532 | 5430 | 82348 |
| DMV026 | 373139 | 1145495 | 5258U | 15 203415475 | 68418143997195036 | -1554 | 80731 |
| DMV005 | 373151 | 115 7 | 5581C | 33 339415481 | 67663142994195053 | 467 | 81804 |
| DMV027 | 373261 | 1145488 | 5013Y | 9 93415701 | 68423145861195213 | -2174 | 80830 |
| DMV032 | 373181 | 1145332 | 4929U | 5 97415558 | 68656146133195097 | -2526 | 80764 |
| DMV040 | 373290 | 1145193 | 5131Y | 3 134415764 | 68356145761195256 | -1205 | 81431 |
| DMV058 | 373596 | 1144642 | 6215S | 45 656416349 | 69654140242195701 | 3036 | 82540 |
| DMV061 | 373156 | 1144716 | 6577S | 38 754415532 | 69565136870195060 | 3715 | 82074 |
| DMV067 | 372347 | 1144544 | 6339Y | 6 402414042 | 69854133700193883 | 4480 | 83268 |
| DMV109 | 372397 | 1145587 | 5348Y | 22 331415024 | 68292143599194633 | -752 | 81360 |
| DMV111 | 372621 | 1145650 | 4884Y | 27 187414512 | 68210146812194282 | -1506 | 82050 |
| DMV118 | 372979 | 1145891 | 5494Y | 9 223415166 | 67841143152194803 | 56 | 81550 |
| DMV124 | 372034 | 1145892 | 5071S | 14 340413511 | 67875144921193501 | -855 | 82203 |
| DMV125 | 371841 | 1145910 | 5182S | 24 466413061 | 67858144144193143 | -234 | 82532 |
| DMV130 | 372215 | 1145760 | 5421S | 14 696413757 | 68064142690193692 | 18 | 82239 |
| DMV132 | 372095 | 1145641 | 4942S | 28 348413539 | 68245145607193517 | -1400 | 82120 |
| DMV136 | 371540 | 1145583 | 5342S | 7 415412515 | 68353143875192711 | 1441 | 83643 |
| DMV150 | 371656 | 1145392 | 6372V | 81376412736 | 69631136730192879 | 3326 | 83476 |
| DMV172 | 371860 | 1144751 | 5822S | 5 360413134 | 69569140639193176 | 2259 | 82766 |
| DMV173 | 371646 | 1144611 | 7357V | 372247412744 | 69735129072192865 | 5458 | 82649 |
| DMV401 | 371609 | 1144844 | 6356S | 28 752412667 | 69443136311192811 | 3324 | 82425 |
| DMV003 | 373255 | 115 81 | 5438C | 0 303415671 | 67550144125195205 | 571 | 82156 |
| PRV012 | 373819 | 115 484 | 4547S | 0 102416701 | 66935150176196026 | -3059 | 81534 |
| PRV016 | 373980 | 115 355 | 4801V | 0 103417003 | 67119149322196261 | -1757 | 81977 |

DELAMAR VALLEY GRAVITY DATA

| STATION IDENT. | LAT. DEG MIN | LONG. DEG MIN | ELEV. +CODE | TER-COR. IN/OUT | NORTH UTM | EAST UTM / OBSV GRAV / THEO GRAV | FAA | CBA +1000 |
|---|---|---|---|---|---|---|---|---|
| PRV017 | 373859 | 115 359 | 4666V | 0 | 102416779 | 67118149959196084 | -2214 | 81973 |
| PRV018 | 373793 | 115 226 | 4762V | 0 | 101416670 | 67316149626195995 | -1554 | 82305 |
| PRV025 | 373691 | 115 93 | 4919V | 0 | 133416477 | 67515148350195840 | -1196 | 82160 |
| PRV027 | 373470 | 115 191 | 5233V | 0 | 202416065 | 67380146063195518 | -200 | 82160 |
| PRV028 | 373569 | 115 203 | 5015V | 0 | 124416247 | 67351147504195662 | -961 | 82059 |
| PRV029 | 373677 | 115 243 | 47900T | 0 | 102416446 | 67295149006195819 | -1734 | 82031 |
| PRV030 | 373736 | 115 374 | 4621V | 0 | 103416551 | 67100149420195905 | -2997 | 81345 |
| PRV031 | 373620 | 115 360 | 4714V | 0 | 105416337 | 67125149161195736 | -2211 | 81816 |
| PRV032 | 373508 | 115 331 | 4950C | 0 | 135416131 | 67172147803195573 | -1135 | 82067 |
| PRV036 | 373436 | 115 444 | 4829C | 0 | 162415994 | 67009148909195468 | -1113 | 82578 |
| PRV037 | 373538 | 115 484 | 4631C | 0 | 116416182 | 66946149342195617 | -2692 | 81629 |
| PRV039 | 373651 | 115 486 | 4533C | 0 | 106416391 | 66939150254195731 | -2867 | 81773 |
| PRV076 | 372960 | 115 491 | 6055S | 0 | 623415113 | 66957140678194775 | 2920 | 82881 |
| DMV006 | 373049 | 1145920 | 5317Y | 0 | 184415295 | 67795144576194905 | -283 | 81761 |
| DMV007 | 373302 | 1145932 | 5143Y | 0 | 139415762 | 67768145668195273 | -1156 | 81425 |
| DMV008 | 373409 | 1145945 | 5061Y | 0 | 125415960 | 67744146385195429 | -1413 | 81450 |
| DMV009 | 373551 | 1145952 | 4963Y | 0 | 105416222 | 67728147357195636 | -1571 | 81606 |
| DMV010 | 373644 | 1145822 | 4927Y | 0 | 99416398 | 67916147343195771 | -2060 | 81235 |
| DMV011 | 373469 | 1145822 | 4945Y | 0 | 101416075 | 67923146949195516 | -2000 | 81225 |
| DMV012 | 373358 | 1145802 | 5016Y | 0 | 104415870 | 67957146241195355 | -1907 | 81039 |
| DMV013 | 373217 | 1145849 | 5150Y | 0 | 131415608 | 67393145450195149 | -1231 | 81335 |
| DMV014 | 373130 | 1145848 | 5206Y | 0 | 146415447 | 67593145095195023 | -942 | 81443 |
| DMV015 | 373045 | 1145764 | 5137Y | 0 | 138415292 | 68025145344194699 | -1208 | 81409 |
| DMV016 | 373134 | 1145723 | 5080Y | 0 | 118415458 | 68032145580195028 | -1639 | 81153 |
| DMV017 | 373273 | 1145723 | 5018Y | 0 | 103415715 | 68077145993195231 | -2012 | 80976 |
| DMV018 | 373407 | 1145684 | 4930Y | 0 | 102415964 | 68129146663195426 | -2366 | 80921 |
| DMV019 | 373555 | 1145712 | 4888Y | 0 | 103416237 | 68081147338195641 | -2301 | 81130 |
| DMV020 | 373598 | 1145603 | 4918Y | 0 | 95416320 | 68240147291195704 | -2129 | 81192 |
| DMV021 | 373468 | 1145600 | 4877Y | 0 | 102416080 | 68250147253195515 | -2363 | 81105 |
| DMV022 | 373293 | 1145601 | 4939Y | 0 | 98415756 | 68255146351195260 | -2427 | 80826 |
| DMV023 | 373183 | 1145649 | 4993Y | 0 | 103415551 | 68139146021195100 | -2041 | 81015 |
| DMV024 | 373050 | 1145649 | 5025U | 0 | 112415305 | 68195146013194906 | -1601 | 81372 |
| DMV025 | 373017 | 1145535 | 4937Y | 0 | 111415248 | 68364146276194858 | -2119 | 81153 |
| DMV028 | 373380 | 1145490 | 4865Y | 0 | 110415921 | 68415146697195387 | -2904 | 80613 |
| DMV029 | 373555 | 1145491 | 4914Y | 0 | 95416244 | 68407147187195641 | -2208 | 81127 |
| DMV030 | 373470 | 1145381 | 4850Y | 0 | 109416091 | 68572147140195518 | -2734 | 80833 |
| DMV031 | 373293 | 1145380 | 4830Y | 0 | 112415763 | 68551146987195260 | -2817 | 80621 |
| DMV033 | 373059 | 1145377 | 4820Y | 0 | 105415331 | 68595146780194919 | -2778 | 80597 |
| DMV034 | 373376 | 1145298 | 4825U | 0 | 118415920 | 68698147090195381 | -2832 | 80779 |
| DMV035 | 373454 | 1145257 | 4839Y | 0 | 116416065 | 68755147067195494 | -2587 | 80725 |

DELAMAR VALLEY GRAVITY DATA

| STATION IDENT. | LAT. DEG MIN | LONG. DEG MIN | ELEV. +CODE | TER-COR. IN/OUT | NORTH UTM | EAST UTM OBSV GRAV THEO GRAV | FAA | CBA +1000 |
|---|---|---|---|---|---|---|---|---|
| DMV036 | 373555 | 1145271 | 4854Y | 0 | 102416251 | 68730147204195641 | -2756 | 80790 |
| DMV037 | 373586 | 1145086 | 4897S | 0 | 102416315 | 69001146941195687 | -2659 | 80740 |
| DMV038 | 373469 | 1145131 | 4937V | 0 | 107416097 | 68940146544195516 | -2510 | 80759 |
| DMV039 | 373380 | 1145160 | 4946V | 0 | 105415932 | 68901146381195357 | -2458 | 80778 |
| DMV041 | 373184 | 1145180 | 4887S | 0 | 113415568 | 68880146359195101 | -2750 | 80695 |
| DMV042 | 373086 | 1145228 | 4809S | 0 | 109415336 | 68813146712194958 | -2939 | 80713 |
| DMV043 | 373036 | 1145114 | 4919S | 0 | 118415389 | 68951145983194958 | -2682 | 80659 |
| DMV044 | 373217 | 1145091 | 5016S | 0 | 117415632 | 69010145679195149 | -2264 | 80745 |
| DMV045 | 373356 | 1145013 | 5159V | 0 | 124415892 | 69119144837195352 | -1962 | 80566 |
| DMV046 | 373483 | 1144987 | 5092S | 0 | 117416128 | 69151145522195537 | -2092 | 80655 |
| DMV047 | 373577 | 1144894 | 5103V | 0 | 120416305 | 69284145682195673 | -1966 | 80749 |
| DMV048 | 373474 | 114481353232T | | 0 | 153416117 | 69408144600195523 | -326 | 81172 |
| DMV049 | 373362 | 1144868 | 5399S | 0 | 150415903 | 69332143663195360 | -880 | 80556 |
| DMV050 | 373243 | 1144927 | 5314S | 0 | 152415636 | 69250144047195187 | -1123 | 80900 |
| DMV051 | 373133 | 114497951119T | | 0 | 142415481 | 69178145060195027 | -1357 | 80850 |
| DMV052 | 373029 | 1144956 | 5127S | 0 | 148415239 | 69216145057194676 | -1566 | 81095 |
| DMV053 | 373035 | 1144844 | 5364S | 0 | 181415304 | 69381143649194884 | -752 | 81133 |
| DMV054 | 373144 | 1144835 | 5377V | 0 | 203415506 | 69390144121195043 | -316 | 81547 |
| DMV055 | 373611 | 1144748 | 5211S | 0 | 150416373 | 69498146096195723 | -585 | 81792 |
| DMV056 | 373255 | 1144795 | 5613S | 0 | 200415713 | 69444143251195205 | 374 | 81929 |
| DMV057 | 373409 | 1144711 | 5622V | 0 | 189416001 | 69561143530195429 | 1013 | 82027 |
| DMV059 | 373483 | 1144605 | 5681S | 0 | 190416141 | 69714143624195537 | 1555 | 82363 |
| DMV060 | 373293 | 1144654 | 5935S | 0 | 257415738 | 69650141618195260 | 2217 | 82231 |
| DMV064 | 372934 | 1144667 | 5970Y | 0 | 307415124 | 69646142096194737 | 3548 | 83493 |
| DMV068 | 372309 | 1144731 | 5352V | 0 | 245413966 | 69579144445193828 | 987 | 82978 |
| DMV069 | 372429 | 1144795 | 5143V | 0 | 253414185 | 69450145674194003 | 74 | 82736 |
| DMV070 | 372570 | 1144836 | 5105Y | 0 | 206414445 | 69413145601194209 | -562 | 82233 |
| DMV072 | 372847 | 1144684 | 5681Y | 0 | 278414962 | 69625142605194611 | 1462 | 82364 |
| DMV073 | 372927 | 1144795 | 5472Y | 0 | 197415106 | 69458143152194727 | -76 | 81458 |
| DMV074 | 372823 | 1144858 | 5261V | 0 | 179414912 | 69370143749194576 | -1313 | 80922 |
| DMV075 | 372695 | 1144871 | 5162Y | 0 | 177414675 | 69356144340194390 | -963 | 81603 |
| DMV076 | 372497 | 1144975 | 4844Y | 0 | 158414305 | 69211146341194102 | -2173 | 81463 |
| DMV077 | 372405 | 1144957 | 4838Y | 0 | 161414135 | 69242146356193968 | -2081 | 81579 |
| DMV078 | 372311 | 1144910 | 4973Y | 0 | 176413963 | 69315145558193831 | -1471 | 81743 |
| DMV079 | 372272 | 1145026 | 4843Y | 0 | 149413837 | 69145146005193774 | -2191 | 81440 |
| DMV080 | 372355 | 1145105 | 4702V | 0 | 141414038 | 69025146337193695 | -3308 | 80796 |
| DMV081 | 372460 | 1145130 | 4680V | 0 | 137414231 | 68984146277194048 | -3727 | 80448 |
| DMV082 | 372626 | 1145030 | 4873Y | 0 | 140414542 | 69125146072194289 | -2356 | 81163 |
| DMV083 | 372721 | 1145046 | 4882V | 0 | 139414717 | 69097146132194427 | -2300 | 81195 |
| DMV084 | 372732 | 1144981 | 5021Y | 0 | 153414832 | 69190145442194516 | -1320 | 81208 |

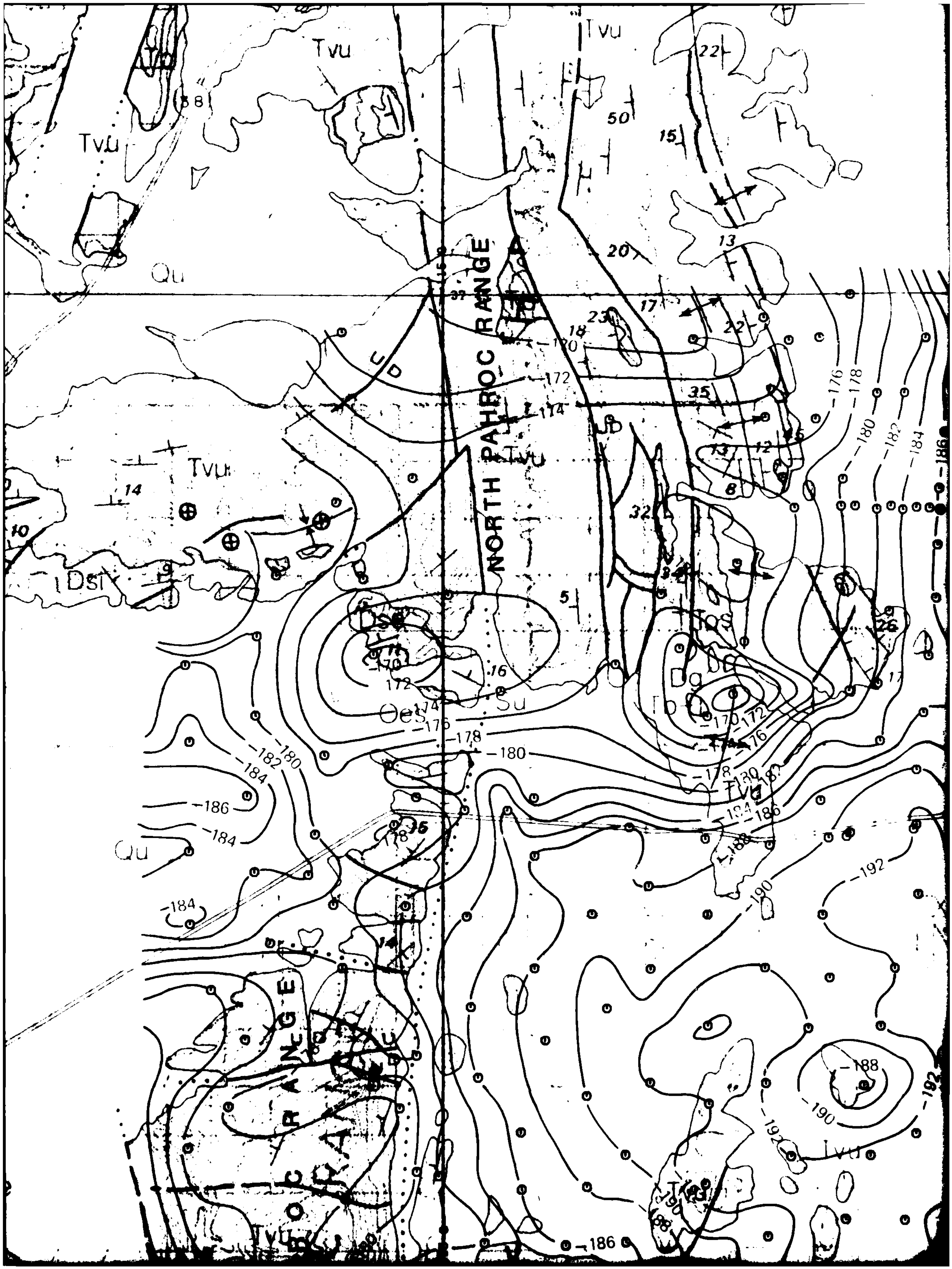
# DELAMAR VALLEY GRAVITY DATA

| STATION IDENT. | LAT. DEG MIN | LONG. DEG MIN | ELEV. +CODE | TER-COR. IN/OUT | NORTH UTM | EAST UTM / OBSV GRAV / THEO GRAV | FAA | CBA +1000 |
|---|---|---|---|---|---|---|---|---|
| DMV085 | 372902 | 1144943 | 5140Y | 0 | 159415055 | 69241144602194691 | -1714 | 30914 |
| DMV086 | 372966 | 114506149560T | | 0 | 131415169 | 69064145559194784 | -2583 | 30645 |
| DMV087 | 372834 | 114510348711T | | 0 | 127415016 | 69006146057194665 | -2766 | 30747 |
| DMV088 | 372811 | 114513648081T | | 0 | 124414630 | 68960146471194558 | -2838 | 30897 |
| DMV089 | 372730 | 114517647500T | | 0 | 130414729 | 68905146612194440 | -3126 | 30803 |
| DMV090 | 372574 | 1145180 | 4696V | 0 | 143414440 | 68906146288194214 | -3731 | 30395 |
| DMV091 | 372260 | 1145196 | 4655V | 0 | 133413859 | 68895146522193757 | -3427 | 30830 |
| DMV092 | 372368 | 1145240 | 4603V | 0 | 144414057 | 68826146436193914 | -4159 | 30255 |
| DMV093 | 372536 | 1145233 | 4743V | 0 | 116415016 | 68814146812194667 | -3219 | 30720 |
| DMV094 | 372956 | 1145196 | 4797Y | 0 | 114415146 | 68856146437194769 | -3187 | 30565 |
| DMV095 | 372952 | 1145332 | 4764V | 0 | 109415134 | 68666146808194763 | -3121 | 30739 |
| DMV096 | 372732 | 1145310 | 4689V | 0 | 133414821 | 68705147013194516 | -3375 | 30766 |
| DMV097 | 372658 | 1145298 | 4653Y | 0 | 133414592 | 68723146627194336 | -3919 | 30349 |
| DMV098 | 372554 | 1145359 | 4613S | 0 | 145414397 | 68642146668194184 | -4056 | 30338 |
| DMV099 | 372436 | 114529446050T | | 0 | 139414274 | 68741146379194036 | -4369 | 30064 |
| DMV100 | 372406 | 114533345850T | | 0 | 131414125 | 68687146450193969 | -4370 | 30122 |
| DMV101 | 372327 | 114537245669T | | 0 | 144413977 | 68633146577193654 | -4298 | 30270 |
| DMV103 | 372409 | 1145467 | 4582S | 0 | 123414126 | 68489147104193974 | -3749 | 30746 |
| DMV106 | 372698 | 1145418 | 4655S | 0 | 128414662 | 68549147091194394 | -3494 | 30757 |
| DMV107 | 372850 | 1145419 | 4747V | 0 | 114414943 | 68542146961194615 | -2980 | 30943 |
| DMV110 | 372735 | 1145554 | 4673Y | 0 | 132414726 | 68347147825194443 | -2645 | 31549 |
| DMV112 | 372501 | 1145628 | 4690Y | 0 | 134414291 | 68248147875194107 | -2094 | 32043 |
| DMV114 | 372400 | 1145770 | 4818Y | 0 | 143414099 | 68042146354193960 | -1763 | 31947 |
| DMV115 | 372535 | 1145759 | 4863V | 0 | 202414349 | 68053146909194157 | -1431 | 32135 |
| DMV116 | 372704 | 1145724 | 4962V | 0 | 164414663 | 68098146799194403 | -905 | 32335 |
| DMV122 | 372238 | 114591446900T | | 0 | 122413795 | 67836147938193725 | -1649 | 32476 |
| DMV123 | 372173 | 114584547500T | | 0 | 120413677 | 67941147404193630 | -1523 | 32396 |
| DMV127 | 371793 | 1145761 | 4538S | 0 | 133412977 | 68030148548193078 | -1823 | 32832 |
| DMV128 | 371971 | 1145810 | 4540C | 0 | 109413305 | 68000148562193337 | -2049 | 32575 |
| DMV129 | 372109 | 114577546660T | | 0 | 114413561 | 68047147738193537 | -1837 | 32362 |
| DMV133 | 372012 | 114565245430T | | 0 | 117413386 | 68232148507193397 | -2136 | 32486 |
| DMV134 | 371902 | 1145682 | 4538C | 0 | 136413181 | 68192148398193237 | -2132 | 32527 |
| DMV137 | 371635 | 1145548 | 4837S | 0 | 307412692 | 68401147183192849 | 327 | 33966 |
| DMV138 | 371773 | 1145505 | 4972S | 0 | 247412948 | 68459146038193049 | -218 | 33071 |
| DMV139 | 371831 | 1145613 | 4543Y | 0 | 136413052 | 68297148437193133 | -1942 | 32699 |
| DMV141 | 371998 | 114553145522T | | 0 | 141413364 | 68411147756193376 | -2782 | 31834 |
| DMV142 | 372078 | 114549245499T | | 0 | 127413513 | 68466147508193492 | -3164 | 31444 |
| DMV143 | 372171 | 114544945499T | | 0 | 126413686 | 68525147165193628 | -3642 | 30965 |
| DMV144 | 372247 | 114541045561T | | 0 | 136413828 | 68580146794193738 | -4067 | 30529 |
| DMV145 | 372180 | 1145280 | 4600C | 0 | 135413708 | 68774146928193641 | -3422 | 31024 |

DELAMAR VALLEY GRAVITY DATA

| STATION IDENT. | LAT. DEG MIN | LONG. DEG MIN | ELEV. +CODE | TER-COR. IN/OUT | NORTH UTM | EAST UTM OBSV GRAV THEO GRAV | FAA | CBA +1000 |
|---|---|---|---|---|---|---|---|---|
| DMV148 | 371957 | 1145257 | 4696S | 0 | 141413297 | 68818147250193317 | -1872 | 82252 |
| DMV149 | 371823 | 1145294 | 4898S | 0 | 188413048 | 68769147023193122 | 2 | 83480 |
| DMV152 | 371690 | 1145172 | 5656S | 0 | 456412806 | 68954141510192929 | 1614 | 82979 |
| DMV154 | 371963 | 1145133 | 4784S | 0 | 154413312 | 69001146353193325 | -1450 | 32387 |
| DMV155 | 372082 | 1145195 | 4692V | 0 | 136413530 | 68904146890193498 | -2452 | 31681 |
| DMV156 | 372166 | 1145119 | 4755V | 0 | 153413698 | 69013146429193620 | -2442 | 31493 |
| DMV157 | 372136 | 1145005 | 4958C | 0 | 165413636 | 69132145893193577 | -1023 | 32232 |
| DMV158 | 372021 | 1145017 | 5128S | 0 | 209413423 | 69169144909193410 | -239 | 82480 |
| DMV159 | 371826 | 1145018 | 4929S | 0 | 191413062 | 69176146159193126 | -579 | 82831 |
| DMV160 | 371686 | 1145028 | 5052V | 0 | 206412803 | 69167145382192923 | 5 | 32980 |
| DMV161 | 371534 | 1144994 | 5593S | 0 | 373412616 | 69222142095192775 | 1959 | 33256 |
| DMV163 | 371671 | 1144861 | 5776C | 0 | 404412781 | 69415140396192901 | 1857 | 82561 |
| DMV164 | 371763 | 1144915 | 5069S | 0 | 228412949 | 69331144933193035 | -396 | 82543 |
| DMV165 | 371905 | 1144956 | 5025V | 0 | 205413211 | 69264145466193241 | -493 | 82583 |
| DMV166 | 372113 | 1144866 | 5228V | 0 | 220413598 | 69358144979193543 | 633 | 83027 |
| DMV167 | 372190 | 1144903 | 5076V | 0 | 184413739 | 69323145629193655 | -255 | 82616 |
| DMV168 | 372170 | 1144762 | 5352S | 0 | 233413707 | 69539143678193626 | 422 | 82401 |
| DMV170 | 372071 | 1144725 | 5593S | 0 | 281413526 | 69598142568193432 | 1725 | 32930 |

END OF LIST


NORTH PAHROC RANGE
Tvu
Qu
Tvu
Qu
Dsl
Dsc
Oes
Su
Tos
Dg
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-176
-178
-180
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-186
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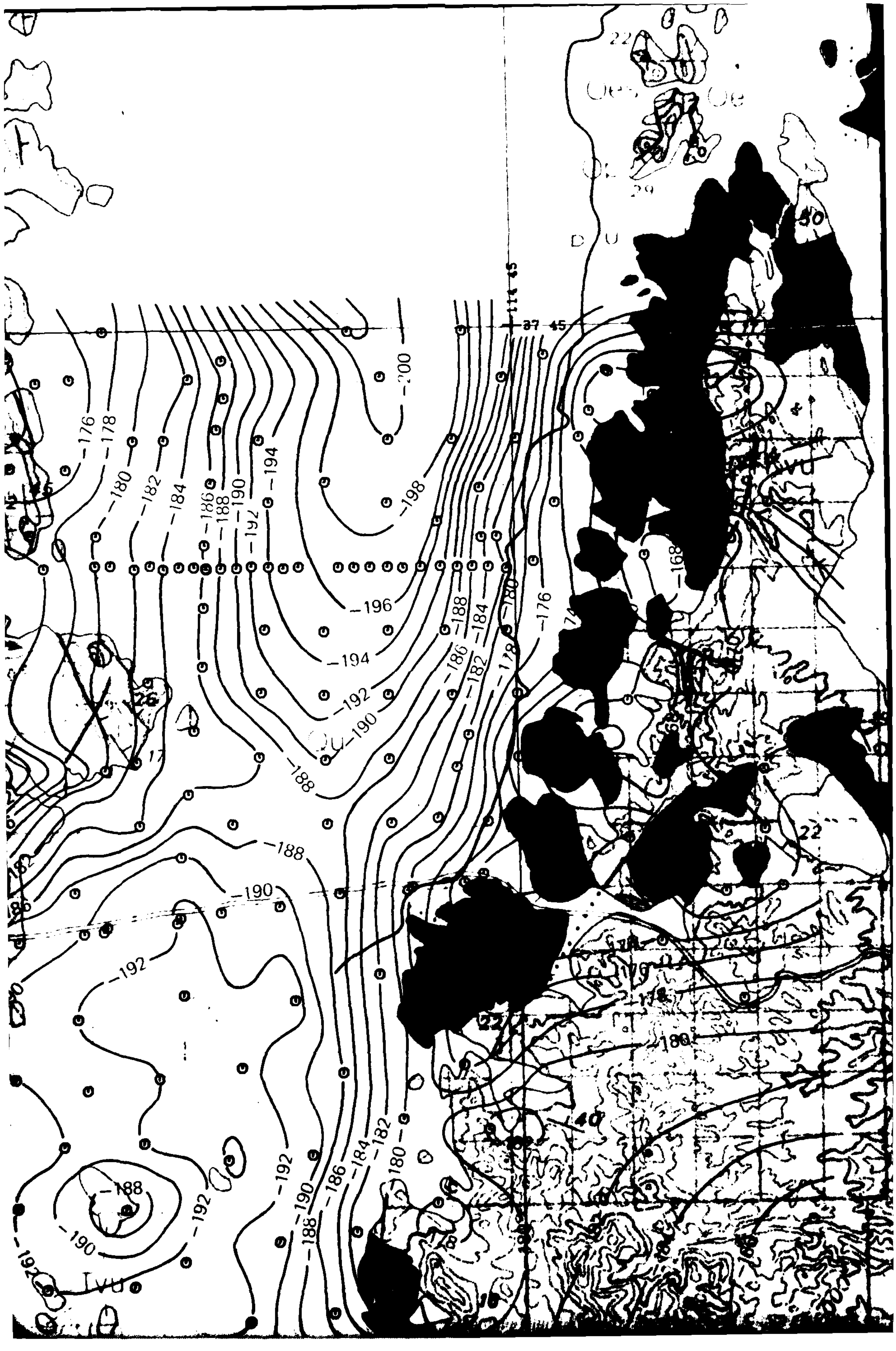
-186



114 45
37 45
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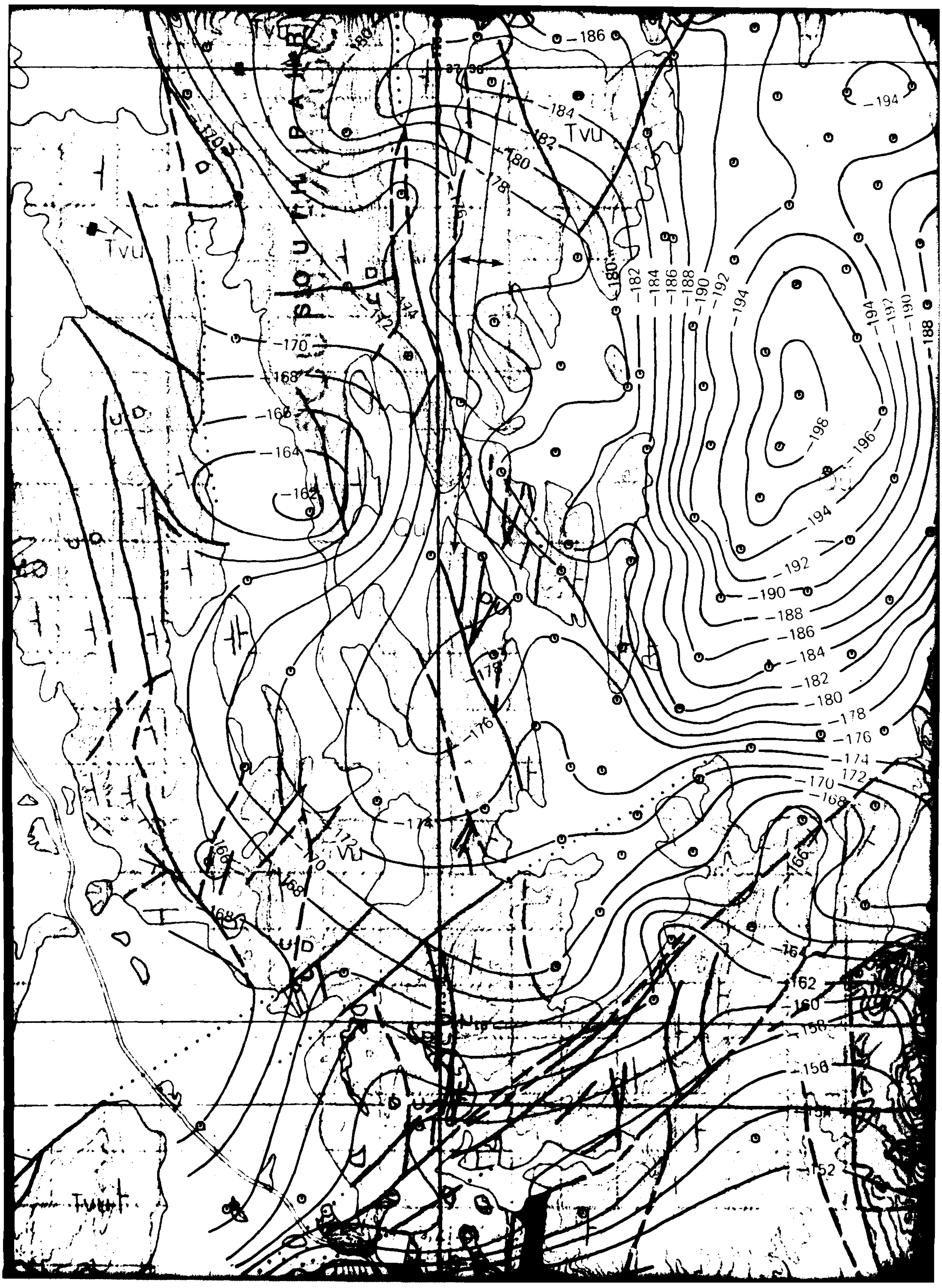
Qu
Tvu



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Tvu
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SOUTH PARK
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-166
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-152
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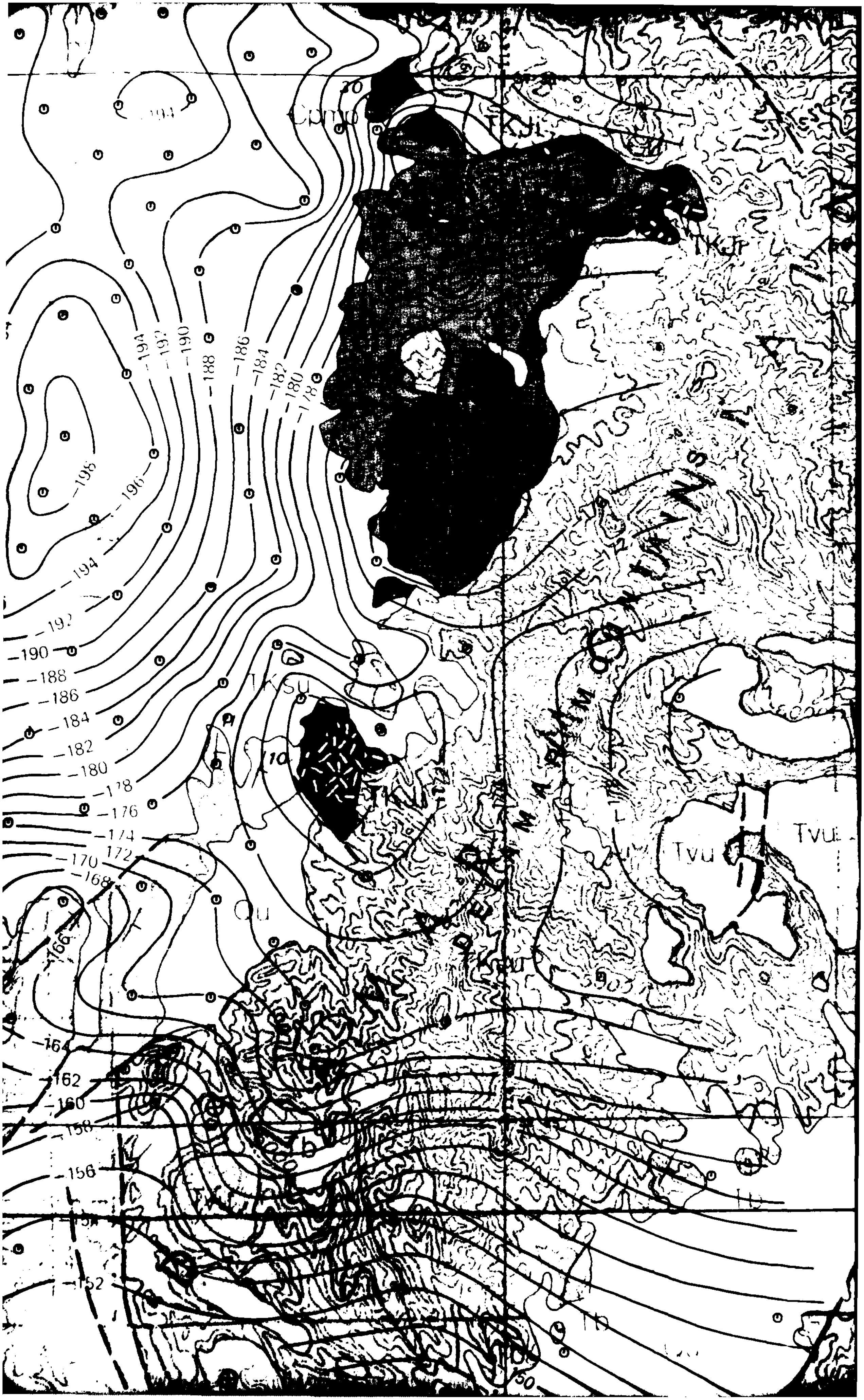

Tvu
Tvu
Qu
TKsu
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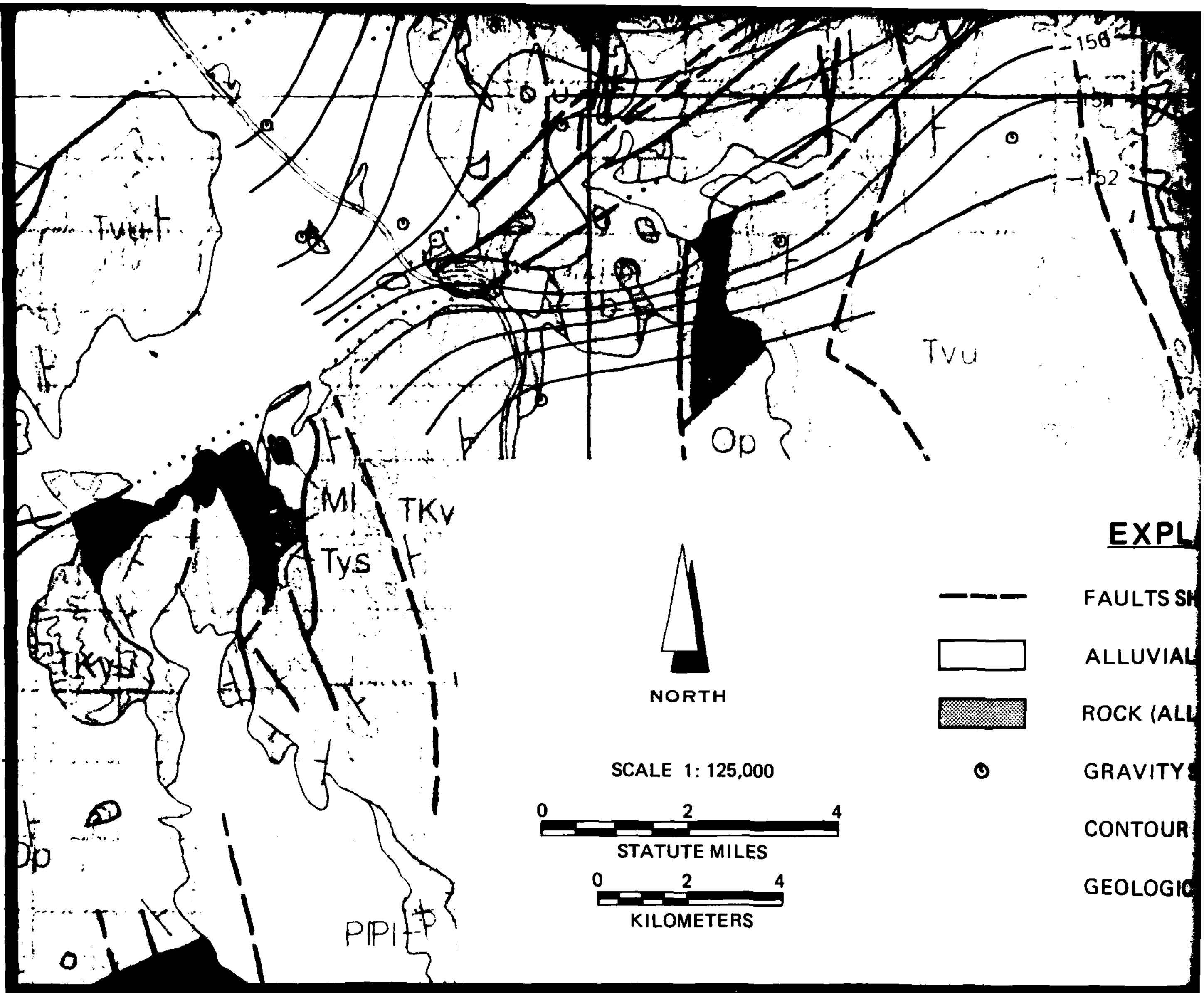
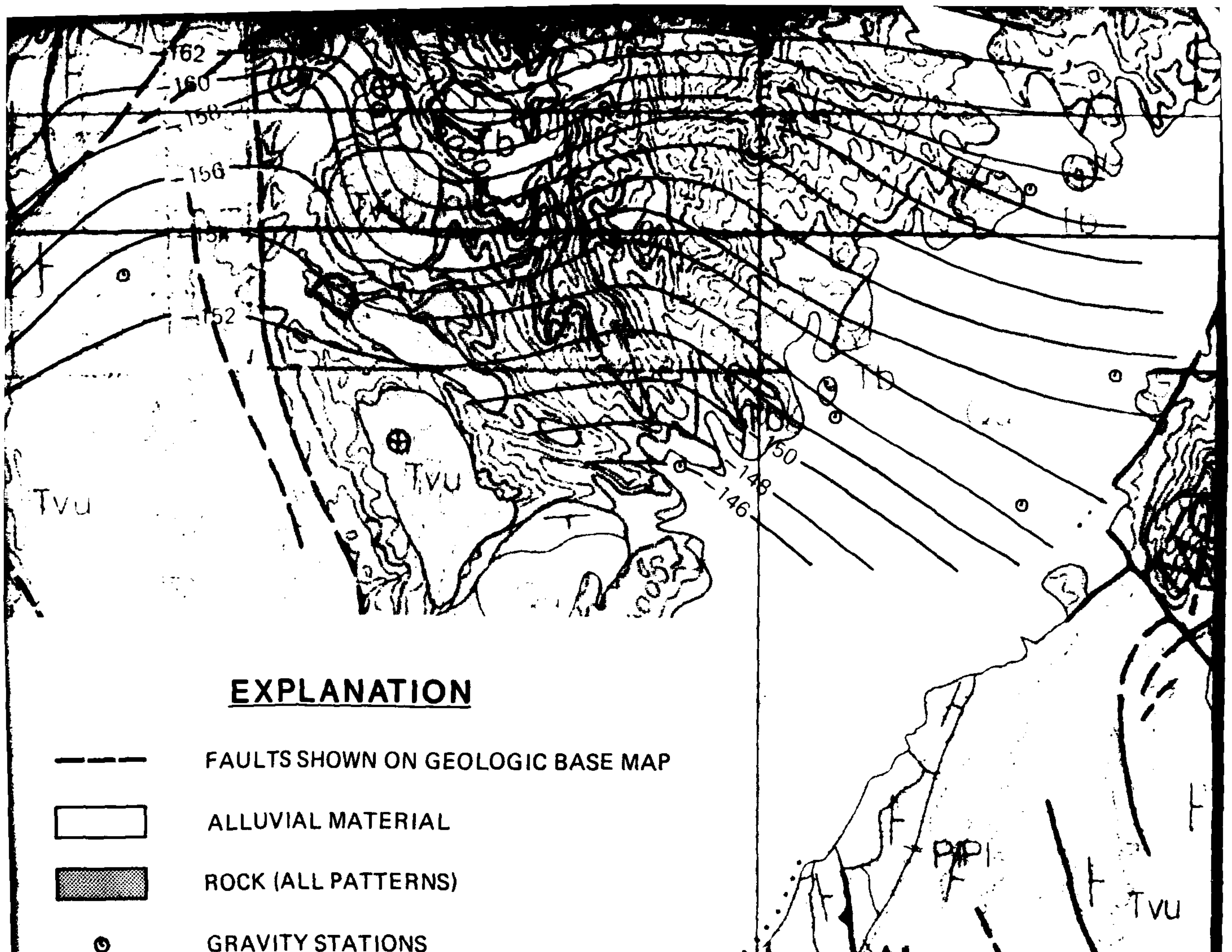

Tvu
Op
Ml
TKv
Tys
PIPl
152
NORTH
SCALE 1: 125,000
0 2 4
STATUTE MILES
0 2 4
KILOMETERS
EXPL
FAULTS SH
ALLUVIAL
ROCK (ALL
GRAVITY
CONTOUR
GEOLOGIC

5




## EXPLANATION

FAULTS SHOWN ON GEOLOGIC BASE MAP

ALLUVIAL MATERIAL

ROCK (ALL PATTERNS)

GRAVITY STATIONS

CONTOUR INTERVAL = 2.0 MILLIGALS

GEOLOGIC BASE MAP: E.L. Howard (1978)

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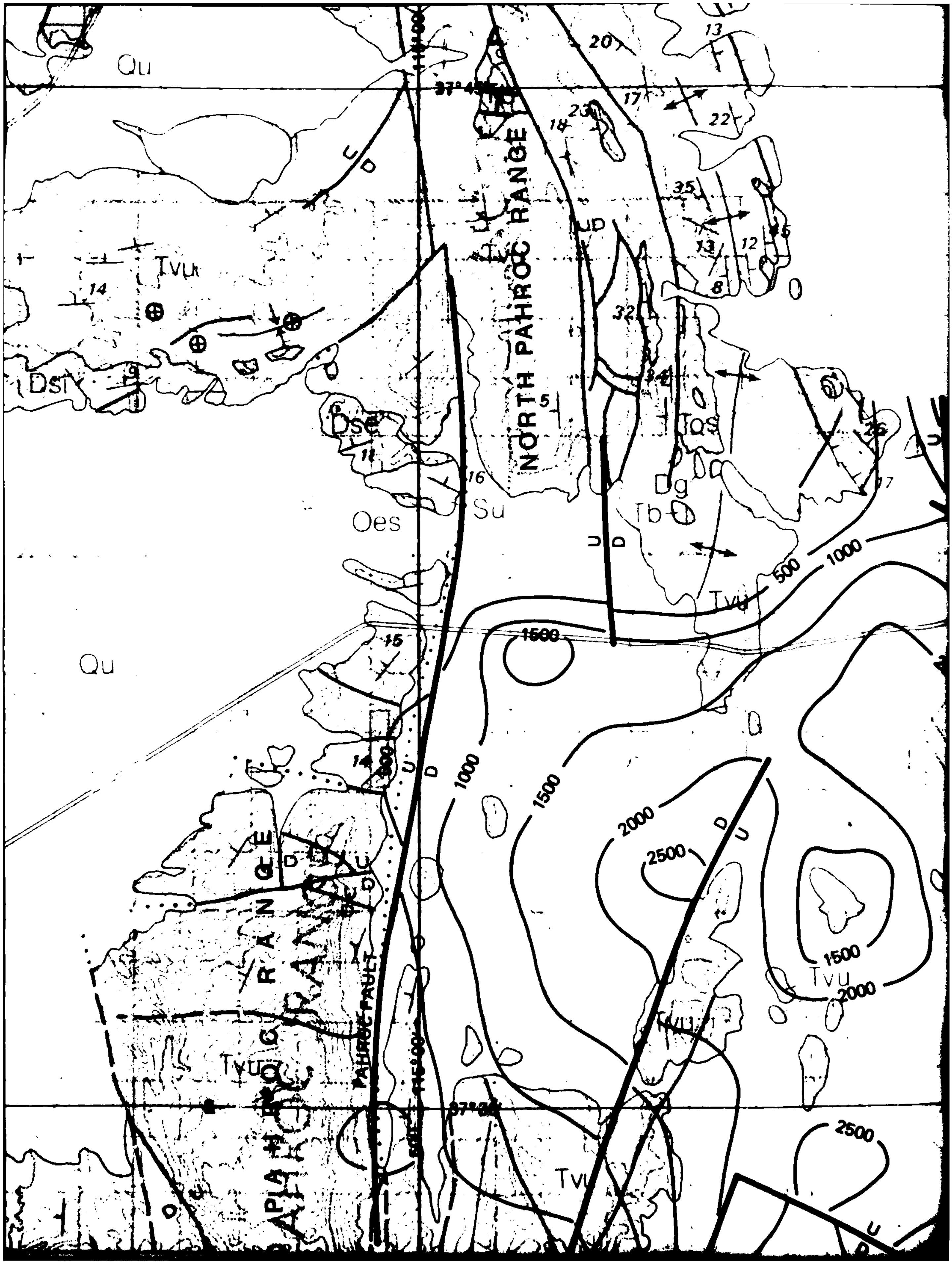
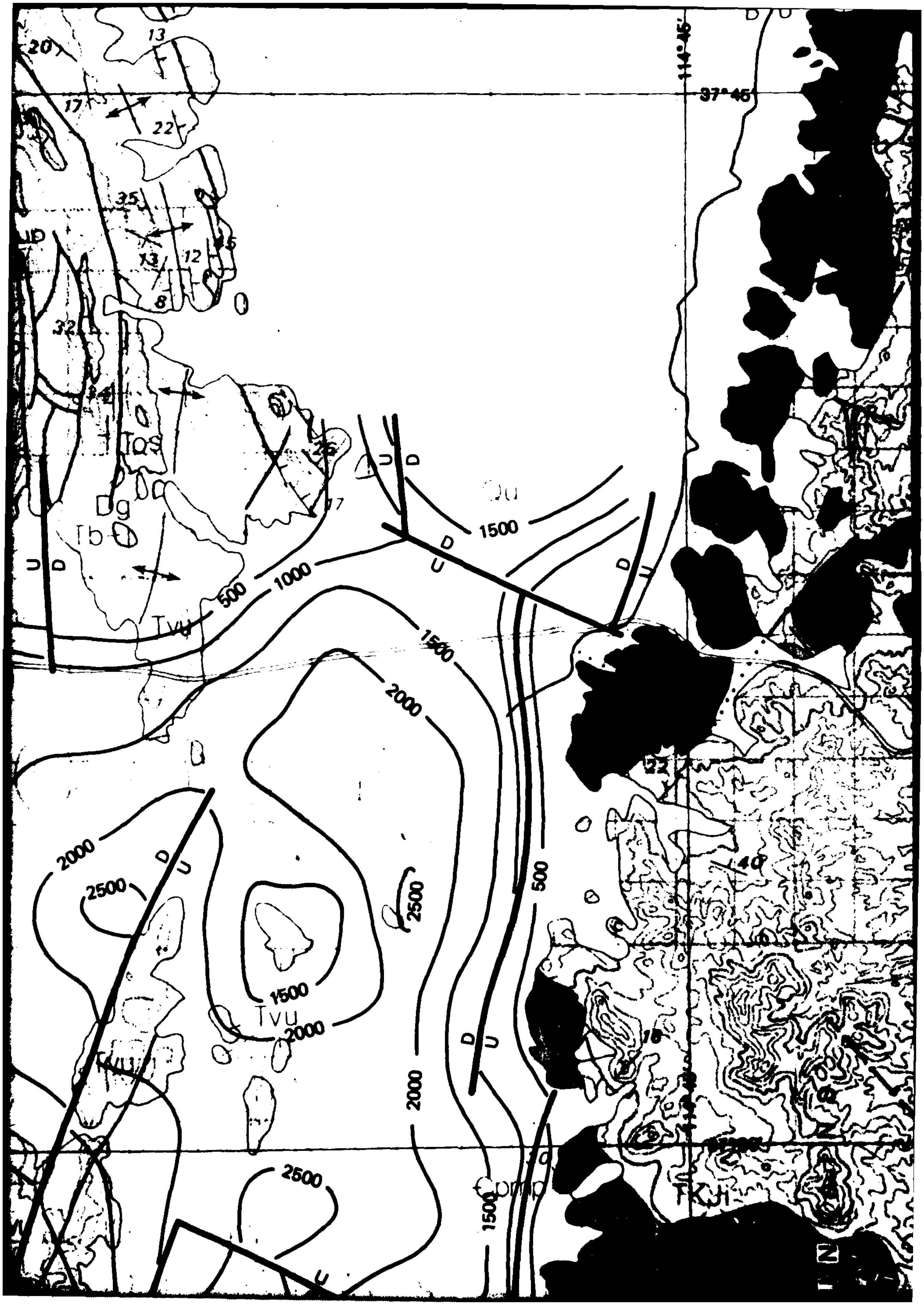
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

COMPLETE BOUGUER
ANOMALY CONTOURS
DELAMAR VALLEY, NEVADA

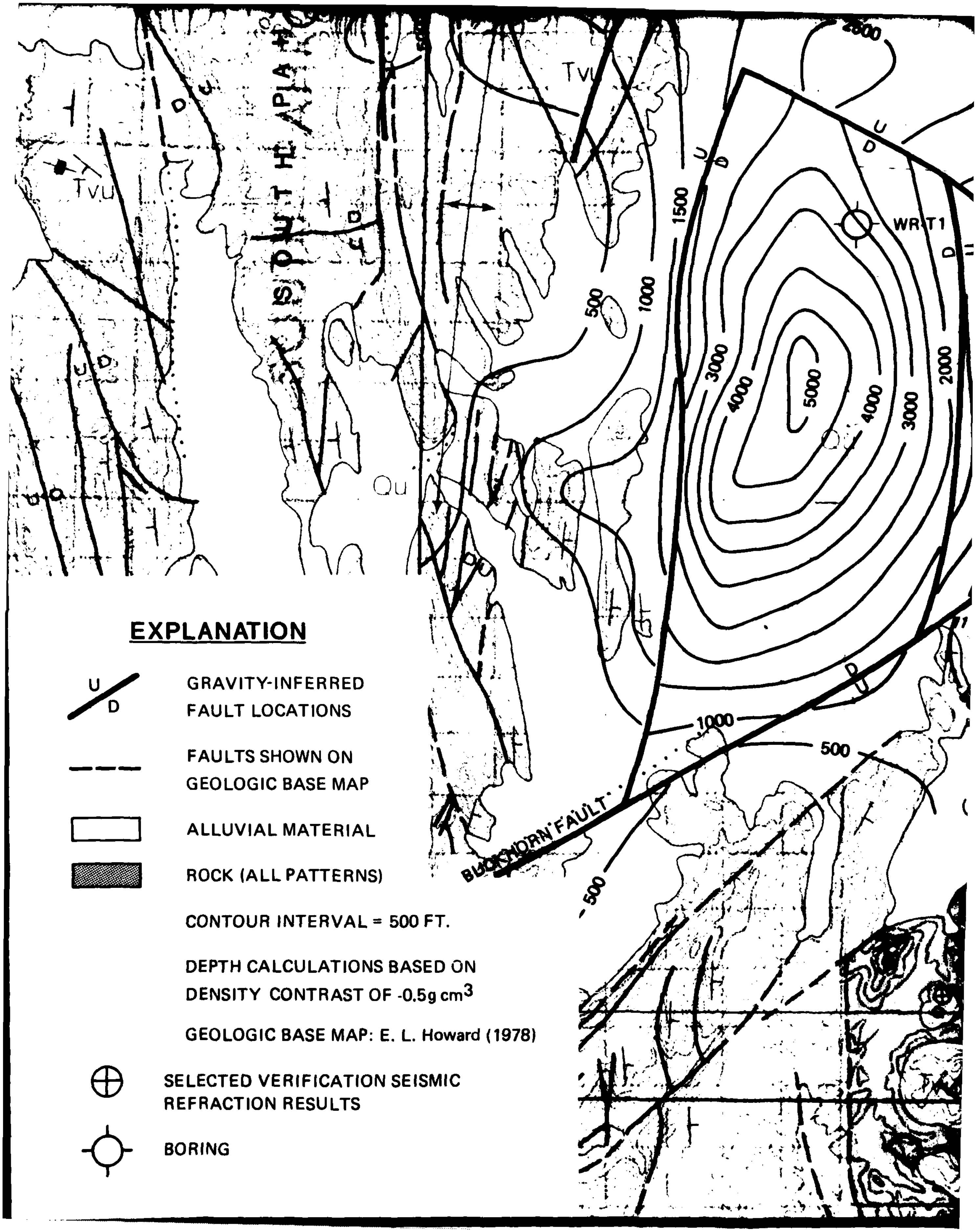
20 JUL 81

DRAWING 1

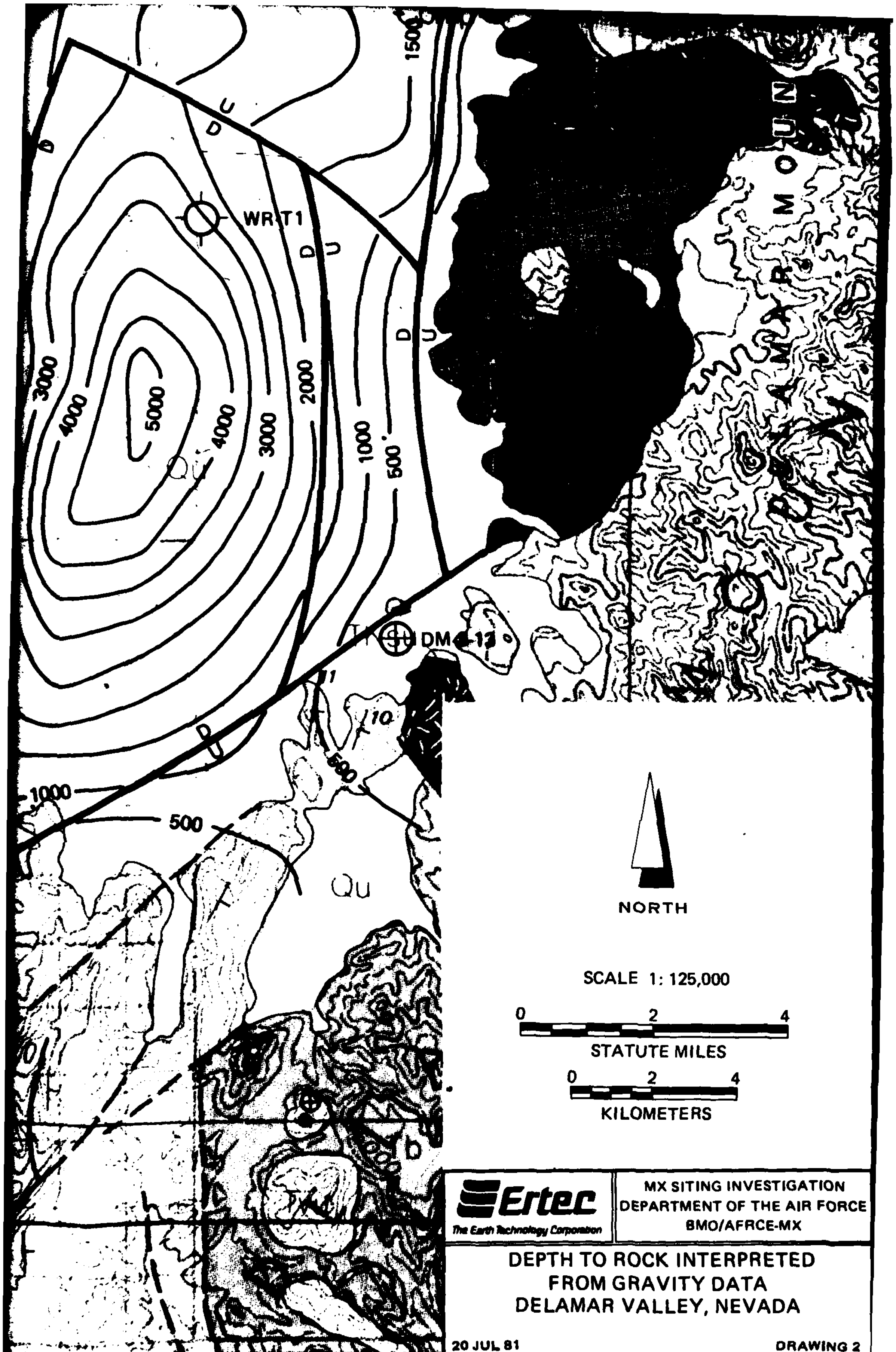

Qu
Tvu
Dsi
Dse
Oes
Su
NORTH PAHROC RANGE
Tqs
Dg
Tb
PAHROC FAULT
Tvu
500
1000
1500
2000
2500



37°45'
114°45'
Qu
Tqs
Dg
Tb
Tvu
500
1000
1500
2000
2500



EXPLANATION
GRAVITY-INFERRED FAULT LOCATIONS
FAULTS SHOWN ON GEOLOGIC BASE MAP
ALLUVIAL MATERIAL
ROCK (ALL PATTERNS)
CONTOUR INTERVAL = 500 FT.
DEPTH CALCULATIONS BASED ON DENSITY CONTRAST OF -0.5g cm3
GEOLOGIC BASE MAP: E. L. Howard (1978)
SELECTED VERIFICATION SEISMIC REFRACTION RESULTS
BORING
U
D
Tvu
Qu
WRT1
2500
1500
1000
500
2000
3000
4000
5000
BUCKHORN FAULT
-500

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MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

DEPTH TO ROCK INTERPRETED
FROM GRAVITY DATA
DELAMAR VALLEY, NEVADA

20 JUL 81

DRAWING 2